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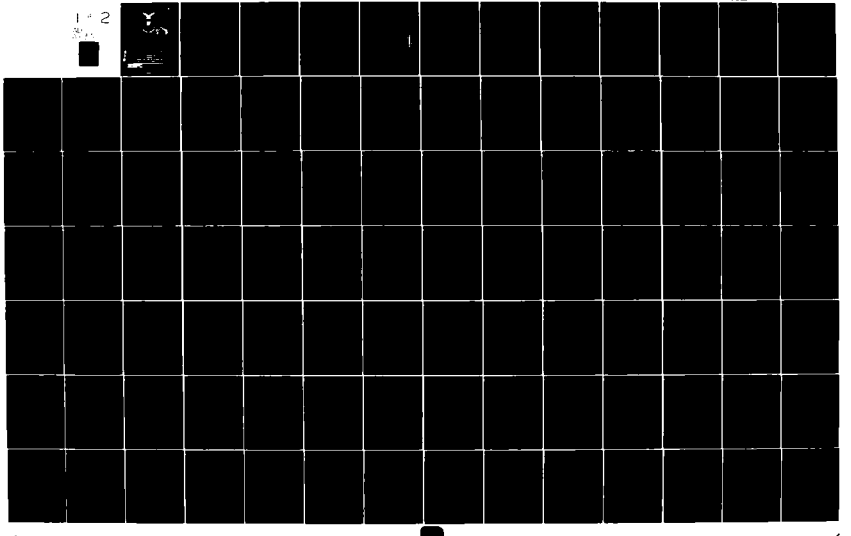

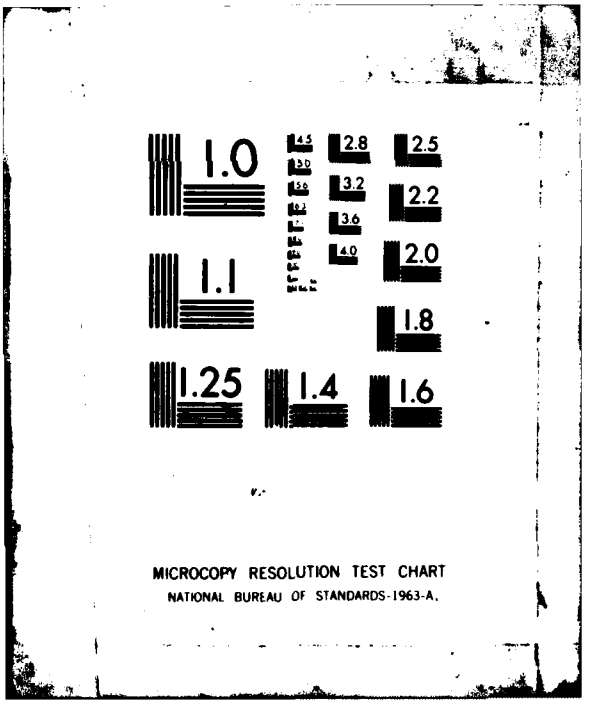
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AN EXAMINATION OF DUAL TRACK CAREER MANAGEMENT: CURRENT PILOT ATTITUDES AND COST ANALYSIS

Gordon L. Bendick, Captain, USAF
David J. Jones, Captain, USAF

LSSR 84-81

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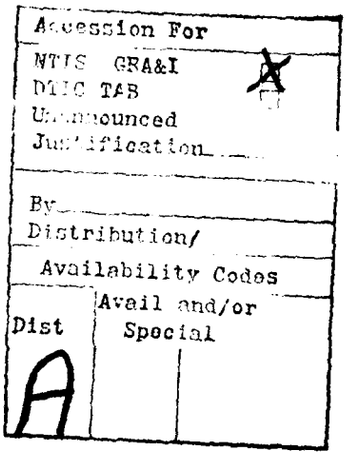

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Recent retention figures indicate pilots are separating from the Air Force in numbers that exceed the proposed guidelines for retention established in the USAF Personnel Plan. An oft-cited reason for this poor retention is poor career management of pilots. That is, some separating pilots leaving a career of strictly flying for rated supplement duties. An alternative personnel management system for pilots, the Dual Track System, is proposed. The Dual Track System offers a guaranteed flying career for a portion of the pilot force. This analysis examines the Dual Track System for effectiveness and efficiency. Effectiveness is statistically analyzed with a survey vehicle. The survey analyzes attitudes concerning both the present management system and Dual Track System. The results of the analysis tend to indicate that pilots who are separating from the Air Force would reconsider if the Dual Track System were currently available to them. Efficiency is evaluated by comparing the life cycle costs of pilots in both management systems. The Dual Track System affords a potential cost saving to the Air Force at all levels of utilization in this analysis. Thus, the Dual Track System is an effective and efficient pilot career management system.

LSSR 84-81

AN EXAMINATION OF DUAL TRACK CAREER MANAGEMENT: CURRENT PILOT ATTITUDES AND COST ANALYSIS

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirement for the

Degree of Master of Science in Systems Management

By

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September 1981

This thesis, written by

Captain Gordon L. Bendick

and

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has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN SYSTEMS MANAGEMENT

DATE: 30 September 1981

COMMITTEE CHAIRMAN

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CHAPTER 1

INTRODUCTION

Background for the Study

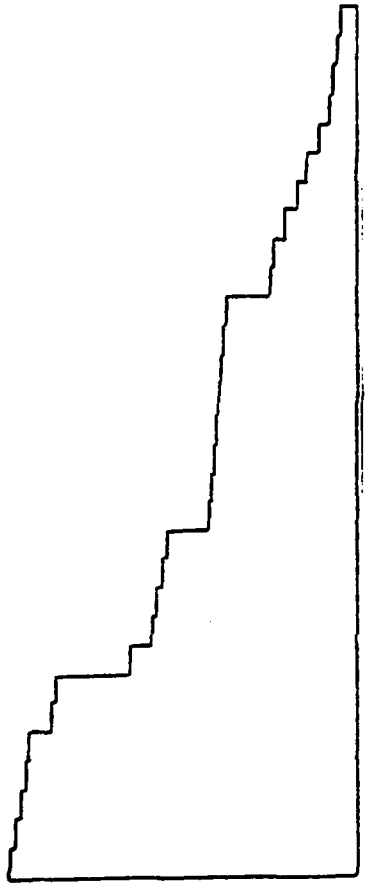
> Without question, the most persistent concerns for Air Force leadership in the 1980s will be the recruitment, training, and retention of the talented people we need to fulfill our mission [27:22].

This testimony by Hans M. Mark, former Secretary of the Air Force, to the House Armed Services Committee in February 1980, highlighted the concern at the highest levels of government over the problem of recruiting and retaining qualified military personnel. In particular, Mark cited the increasing loss of pilots and navigators as a "problem that is threatening to affect our readiness [27:23]."

The problem of pilot retention in the USAF has become critical in recent years, as evidenced by a significant decline in pilot retention rates, which in the late 1970s plummeted to the lowest levels in recent history (8:16). As airline hiring expanded significantly, pilots resigned in droves, seeking employment in the civilian sector. The following figures detail the dramatic increase in loss rates for pilots in their sixth to eleventh year of active duty (7:2;8:1):

FISCAL YEAR	PILOT LOSS RATE
1976	49.4%
1977	52.1%
1978	60.4%
1979	74.0%

These loss rates manifest themselves in several critical areas. Staggering replacement costs, dilution of flying expertise in a large year-group segment, critical shortages in flying-related staff jobs, and a shrinking pool of possible selectees for future senior leadership are a few of the glaring problems to be contended with in the wake of this unprecedented shortfall of pilots (13:4). Clearly, the most pressing problem faced by planners is the cost of replacing qualified pilots to maintain a minimum level of combat readiness. This is not to say that the Air Force cannot perform its role as a first-line defensive force for attaining national political objectives; but its increasing lack of trained and experienced pilots in new and sophisticated weapon systems, as well as existing weapon systems, could be undermined in the coming years (24:3). Further, the Air Force cannot simply replace the pilots lost, but must also train more pilots to meet the increased needs of the next decade. Starting in FY80 and continuing to FY86, the personnel planners for the Air Force predict that a total of 3,000 additional pilots will be required above those initially specified in the Total Objective Plan for Line Officers (TOPLINE) (14).



TAFCS	Number of Pilots
30	87
29	109
28	128
27	146
26	226
25	278
24	339
23	411
22	456
21	486
20	730
19	741
18	753
17	764
16	776
15	787
14	808
13	828
12	1062
11	1093
10	1126
9	1159
8	1276
7	1706
6	1732
5	1850
4	1879
3	1907
2	1936
1	1966

FIGURE 1-1. TOPLINE OBJECTIVE FOR PILOT FORCE

TOPLINE specifies the desired retention rate for pilots and breaks them down into year groups. (See Figure 1). Current TOPLINE objectives show that all year-groups except one "lumped" group are either meeting the stated objective or are insignificantly below. The "lumped" year-group is an aggregate group with 6 to 11 years of

commissioned service. The TOPLINE objective is a 61.4 percent retention rate (34:p.3-3). However, present retention analysis shows that this objective is not being met. In fact, this aggregate year-group is retaining only 42 percent of the pilots as of May 1981, which is a significant improvement over the retention figure of one year earlier, when retention was only 26 percent (23:10).

These dismal retention rates impact the Air Force budget adversely in two areas which require a huge proportion of the defense dollar: first, training an effective pilot force; and second, maintaining the force. Every dollar that the Air Force spends on replacing a separating pilot resource takes money away from weapon systems acquisition, spare part purchases, and personnel compensation, to mention a few of the more critical areas. The cost to train just one graduate of Undergraduate Pilot Training (UPT) is $206,525 (11:72). Compounding this problem is the follow-on training necessary in specific weapon systems to make the pilot a viable combat resource. Each F-15 pilot, for example, undergoes training costing $954,000 after completion of UPT (9). Couple these costs for each pilot with the shortage of 1649 pilots in FY81 and a projected shortage of over 1700 in the next two fiscal years, and the replacement cost for UPT graduates alone becomes over $340 million per year (23:10). This cost figure does not include follow-on training costs. Clearly, the Air

Force needs to protect this large investment made in pilot resources.

Related Research

Retention Studies

Recent studies in the Department of Systems Management, Air Force Institute of Technology (AFIT), have clearly identified factors that are associated with career intent among rated officers. Vrooman, in his analysis of the 1975 Quality of Air Force Life survey data, found that for rated officers with less than six years of service, career intent and job satisfaction were most closely associated with job challenge, future responsibility, and personal growth satisfaction. Considerations of economic security ranked relatively low (37:72).

Studying data from the 1977 Strategic Airlift Aircrew Survey, Knudsen (20) discovered that the following factors were most closely related to career intent:

Interest in the airlines
Importance of the Air Force as an institution
Flying pay as an incentive
Lack of concern for the individual
Job satisfaction

Other studies have confirmed that pilot resignations are not merely a reaction to dissatisfaction with pay. A survey of exiting pilots conducted by the Air Force Military Personnel Center (AFMPC) in 1978-79 identified five principal irritants that contributed to their decision to separate,

none of which was compensation. In particular, these pilots complained that the OER system did not accurately assess their rated duties--the system concentrated too heavily on performance outside the cockpit (6:23). Many pilots, according to AFMPC, consider Air Force flying better than commercial flying, but they are not willing to put up with the "hassles" of Air Force life (11:71).

A recent study (12), funded by the Air Force Office of Scientific Research, concluded on the basis of survey results from both commercial and Air Force pilots that Air Force pilot attrition problems stem primarily from poor job satisfaction. Job satisfaction is low, the study found, because pilots do not fly enough, and their duties as pilots do not receive the appropriate emphasis.

> Pay, benefits, and assignment policies, though significant problems to retention, are not the most important reasons why Air Force pilots leave the service. . . . [In fact] many of the airline pilots, as well as Air Force pilots who plan to . . . [separate], indicated they would have remained in the Air Force if they were given an opportunity to spend a career performing flying duties and be equitably recognized for doing so [12:23].

The decline in pilot satisfaction was put into sharp focus by Wood (38), whose interviews with junior Air Force pilots revealed a loss of autonomy in the cockpit and an erosion of responsibility due to the Air Force centralized command and control system. The flying function has become routinized to such an extent that they feel little professional prestige in their duties. To these pilots the message

that senior officers convey is that flying itself does not lead to career progression. "Flyers realize they must change specialties or accept a reduced opportunity for promotion . . . [38:492-3]."

Cost Studies

It is universally recognized that the pilot resource is the most expensive training cost the Air Force bears (4:1). Studies of these costs are on-going processes at Air Force Headquarters and major commands. However, these studies are virtually all done by focusing on current personnel management policy and working within that structure to reduce costs. Very little research exists which examines other potential personnel systems for pilots.

A recent study by Lyle Horner indicated a method of cost saving to the Air Force using variable service commitments that depended on follow-on training incurred by the pilot after UPT. Horner assumed that Air Force pilot retention was primarily dependent on airline hiring and projected airline needs at over 17,000 pilots in the next decade. He further postulated 80 percent of their hires would be military trained pilots (19:25). Then, he looked at costs incurred by the Air Force for follow-on training courses by individual aircraft; and he concluded that each pilot should receive a service commitment based on Air Force expenditures to produce combat-ready skills. For example, a C-141 pilot would receive a commitment of three years, since his/her

follow-on training is the least expensive, while an F-15 pilot would receive a ten year commitment to the Air Force, since his/her training is the most expensive (19:30). Sensitivity analysis, varying both airline hiring rates and percentage of military hires, indicated a billion dollar savings in the next decade using variable service commitments (19:40).

An alternative personnel management proposal by Alfred Schroetel examined the costs involved with tenure systems, increased service commitments, and multiple track career management policies. Increased service commitments saved the Air Force $67 million per year in training costs, but this was only for pilots. Increased service commitments for other officers actually cost the Air Force money beyond the sixth year (29:63). The tenure system showed no saving. The multiple track career management showed a marked cost saving to the Air Force, but for pilots only. For navigators and non-rated officers there was a loss to the Air Force, primarily due to retirement costs. Implementation of a career track for pilots only would result in a saving of $34.6 million per year (29:55). Schroetel determined that any change to the present personnel management system should be directed at pilots only, as the decreased training costs realized through enhanced retention outweigh retirement costs (29:63).

A study by Bruce Bennett reinforced Schroetel's

findings. Bennett's paper examined four options to lowering the cost of obtaining and maintaining a rated force. The first option was increasing the commitment an officer incurs for initial pilot or navigator training. Secondly, a warrant officer program similar to the Army's was examined. Next, a system of five year contracts with pilots and navigators was evaluated. Finally, a separate promotion system for pilots and navigators was discussed (1:24).

The first three options were discounted. Bennett, like Schroetel, found that increased commitments saved money, but only in a "buyer's market", and its attractiveness diminished beyond a total of six years (1:20). Both warrant officer and contract programs were infeasible: the first provided insufficient numbers of rated officers for higher command positions in the future; the second provided a questionable surge capacity for wartime expansion. The separate promotion system, or Flight Officer Program, allowed rated officers to spend a 24-year career in cockpit-related duties and diminished the separations of rated officers due to "up-or-out" promotion failures (1:29). A total cost savings was not derived, but for several different aircraft types a savings figure was calculated for pilots and navigators. For example, one B-52H pilot retained in the Air Force produced a savings of $312,000. Collateral cost savings were shown in areas of recurring training (1:49).

A related study by Walter Cosnowski created a pilot

specialist track for persons forced out of the Air Force for non-promotion to Major. The pilot would remain on active duty until 20 years of service and then retire. The cost saving per pilot retained after non-promotion to Major was $613,000 (4:25). Pilots of other aircraft that are more expensive to operate and train into would return an even greater savings to the Air Force.

Purpose of the Study

In light of the declining retention rates, rising dissatisfaction, and the possibility of significant cost savings, these authors feel that an alternative career management system merits study. As defined later, the Dual Track System would provide for a career force of pilots whose primary duty would be to fly and who would not be subject to extensive tours outside the cockpit. This system might have the potential for restoring prestige and a sense of fair treatment to those officers who desire a flying career.

In this study a dual track system of career management for pilots will be defined and examined from two aspects:

1. How effective would operation under a dual track system be? Here, the system will be considered effective if it results in the same or improved pilot retention. A survey of Air Force pilots attending Squadron Officers School (SOS) will serve as the basis for the discussion of effectiveness.

2. How efficient would operation under a dual track system be? The system will be considered efficient if operation would result in the same or reduced cost

for the aircraft included in the study.

Together with conclusions regarding the current view of dual track, attitudes of pilots toward other issues affecting retention will be documented. Then, an in-depth cost analysis of the system will be detailed.

Definition of the Dual Track System

The Dual Track System, as envisioned here, involves two different structures for managing the careers of Air Force pilots. Each pilot is allowed to select either structure, or track, subject to certain limitations, and crossflow between tracks is also permitted at certain phase points. Although the detailed provisions of a complete dual track system are not developed here, sufficient guidelines are presented to allow evaluation of the proposed system. The tracks are also outlined in the survey of pilot attitudes included as Appendix A.

Track I continues the present Air Force system of career development. Emphasis is placed on developing the "whole man", and support duties receive increasing emphasis as the officer's career matures.

Track II encompasses only flying duties and includes these provisions:

1. This option is available to approximately thirty percent of the pilot force.

2. There are no professional military education or advanced degree requirements.

3. Crosstraining from one weapon system to another and PCS moves are kept to a minimum.

4. Officer effectiveness reports and promotions are based only on rated performance, with each track considered separately for promotions.

5. Military pay for each track is comparable, commensurate with promotions.

6. Track II tenure is guaranteed to twenty years, as long as performance is satisfactory, and terminates at a maximum age of fifty-five.

7. Supervisory duties are limited to those directly associated with operational flying.

Initial selection of the desired career management track is made by each pilot near the end of the initial active duty service commitment. An Air Force board makes final judgement on a case-by-case basis, while limiting Track II to thirty percent of the force. Two phase points are provided for changing career plans. At the twelfth year of military service crossflow from either track to the other is allowed; at the seventeenth year of service ten percent of the Track II pilots are permitted to reselect Track I. Both of these options are again subject to board approval.

While these guidelines are relatively general, they contain sufficient detail to permit realistic consideration by pilots for survey purposes and to allow cost analysis conclusions to be drawn. Assumptions and limitations on which this report is based are spelled out in the following two chapters that deal with the methodology employed to complete the twin analysis objectives.

CHAPTER 2

SURVEY ANALYSIS METHODOLOGY

Introduction

One idea of the effectiveness of any personnel management system can be obtained from the perceptions of those affected by the system. The use of a survey, then, was considered the most direct way of measuring USAF pilot attitudes toward the present career management system and the Dual Track System. By analysis of the data gathered, the effectiveness of both systems can be studied and compared.

The purpose of this chapter is to discuss the methodology by which the Dual Track Career Management Survey (Dual Track Survey) was analyzed. First, the content of the survey and the initial data handling will be discussed. Then, the various analytical techniques used in the analysis will be presented. Finally, assumptions and limitations will be listed.

Survey Development

The Dual Track Survey is a synthesis of demographic and attitudinal questions derived principally from three sources: USAF-approved aircrew surveys; the Job Characteristics Inventory (JCI) for three job characteristic

dimensions; and a section designed to elicit information concerning the proposed Dual Track System. The following sections discuss the content of the survey.

Demographics

The demographic questions requested information about the following:

1. Grade
2. Major command of assignment
3. Current pilot qualification
4. Years of active military service
5. Years as a pilot (since UPT)
6. Source of commission
7. Current military status
8. Marital status
9. Days per month in additional duty

Career Intent

In many research studies of employee turnover, expressed career intent has been proven highly related to actual tenure. In particular, Shenk and Willbourn (31) and Shenk (30) demonstrated the validity of predicting military retention from expressed career intent.

Accordingly, the Dual Track Survey measured retention under both career management systems, present (Question 10) and proposed (Question 74), by asking for a response on a seven point response scale, ranging from "Definitely intend to make the Air Force a career" to "Definitely will not make the Air Force a career". The responses to Question 74 were reworded to reflect intentions under the proposed Dual Track System. It is recognized that the latter question is

conjectural, and appropriate limitations concerning its interpretation will be observed throughout this study.

Hoppock Measure

The Hoppock job satisfaction measure, a well validated means of gauging employee job satisfaction, was generated from Questions 15-18 (for proof of its validity, see McNichols, et.al. (21)). Scores from these questions, after appropriate recoding, were simply added to yield the Hoppock score, which ranges from 4 to 28; the higher score indicates higher satisfaction. The Hoppock score was used as a factor score along with the other attitudinal factors throughout the analysis.

Job Characteristics Inventory (JCI)

Developed by Sims, et.al. (32), the JCI is a reliable and consistent method for measuring six job characteristic dimensions: variety, autonomy, task identity, feedback, dealing with others, and friendship opportunities (25:128;32:197). The measurement of job characteristics has gained importance in management research due to a widening interest in how these characteristics affect employee satisfaction, performance, and motivation (32:195-6). Therefore, three of these dimensions were included in the survey in an attempt to shed some light on the pilot retention dilemma. Survey questions (as indicated) were included to measure these defined job characteristics [32:197]:

1. Autonomy: the extent to which employees have a major say in scheduling their work, selecting the equipment they will use, and deciding on procedures to be followed. [Questions 22,25,27,29,32,35]

2. Task Identity: the extent to which employees do an entire or whole piece of work and can clearly identify the result of their efforts. [Questions 23,30,33,36]

3. Feedback: the degree to which employees receive information as they are working which reveals how well they are performing on the job. [Questions 24,26,28,31,34]

Scoring procedures for the JCI are discussed in the following section along with those for the attitudinal factors.

Attitudinal Factors

The majority of the attitudinal questions (39-70) were designed to be converted to factor scores by computing the arithmetic mean of the responses for each factor area. The resultant scores can be readily compared, since they are independent of the number of source questions, and can be weighted equally during subsequent analyses. The JCI scores were similarly produced.

The following attitudinal factors were intended to be measured in this section of the survey. Variables that define each factor are discussed in Chapter IV.

1. Aircraft Commander authority: the degree to which pilots feel they are given authority commensurate with their responsibilities.

2. Additional duties: the extent to which pilots feel that additional duties should be important for career broadening.

3. Erosion of benefits: the extent to which pilots feel that their entitlements are being eroded or taken away.

4. Flight pay: the strength of flight pay as an incentive to fly.

5. Airline interest: the extent to which pilots view the airlines as a ready employment alternative to the Air Force.

6. Institutional commitment: the degree to which pilots view the Air Force as an institution rather than just an occupation.

7. Officer Effectiveness Report (OER) system: how equitable pilots view the system to be.

8. Promotion system: its perceived fairness and effectiveness in maintaining a quality officer force.

9. Security of the future: the security afforded by an Air Force career.

10. Up-or-out policy: the extent to which pilots feel that flying is more important than promotions.

Dual Track Section

The final section of the survey addressed alternative career management under the Dual Track System. Following a one page explanation of Dual Track, a short series of questions asked for reactions to the system and career intentions under the program.

A complete copy of the survey instrument is provided as Appendix A.

Sample Population

The sample population consisted of all pilots attending Squadron Officers School (SOS) in residence in

Classes 81C and 81D. A total sample of 251 pilots was surveyed.

Quality Control

As an initial quality control check of the data base, the raw data were listed and scanned for obvious errors. The following errors were considered grounds for rejection of a case:

1. A large amount of missing data.

2. Any discernible pattern of responses; for example, all middle range responses.

3. Any response pattern which clearly violated common sense; for example, "A B A B . . ." throughout a section of the survey.

As a result of this scan, 9 cases were rejected. Next, 20 percent of the raw data were crosschecked against a printout of the computer data file to correct errors made during coding, keypunch, and computer data entry. The final data base consisted of 242 cases.

Data Transformations

The attitudinal questions in this survey used either a five point or a seven point response scale, with options ranging from "strongly disagree" to "strongly agree". For purposes of data manipulation the responses were assigned numeric values from 1 to 5 or 1 to 7, corresponding to the degree of positive attitude represented by the option; that is, for a positively worded question the response "strongly

disagree" was assigned a value of 1 and "strongly agree" a value of 5 or 7. For negatively worded questions this pattern was reversed. The following are those negatively worded questions whose response scales were reversed for the statistical analysis: Questions 10,13,15,18,49,60,61,74.

Analysis Techniques

Initial Data Analysis

The first portion of the data analysis utilized three subroutines of the Statistical Package for the Social Sciences (SPSS) (22). Subprogram FREQUENCIES provides a frequency distribution table, a number of descriptive statistics, and a histogram of the relative frequencies for each variable. Subprogram CROSSTABS displays in table format the joint frequency distribution of cases according to two or more classification variables. These two routines fulfilled several purposes: first, the data were checked for any out-of-range responses; second, demographic statistics for the sample group were studied and tabulated by career intent and other variables; lastly, two sets of questions, one dealing with reasons for separating and one dealing with reasons for staying in the Air Force, were analyzed for percentages of pilots responding to each reason. Finally, the subprogram PEARSON CORR was invoked to compute the Pearson Product Moment (zero order) correlations between career intent and selected variables. Those variables or factors with

statistically significant correlations with career intent were chosen for the AID and regression analyses.

Factor Analysis

This method of analysis is generally employed to determine whether an underlying pattern of relationships exists so that the data may be reduced to a smaller set of components. These components may then be interpreted as the true source of the observed interrelations in the data.

A common application of factor analysis, used in this study, involves "the testing of hypotheses about the structuring of variables in terms of the expected number of significant factors and factor loadings [22:469]." This was accomplished through the use of the principal-component technique, which produces factors that are uncorrelated with each other. Once the factors are generated, they are interpreted by analyzing the factor "loadings", which are correlations between a given factor and the variables used as inputs. Each factor is considered as measuring some underlying concept if that concept is addressed by each variable with a high loading on that factor. Accordingly, each factor area addressed in the survey was analyzed to determine the actual questions that combined to measure that factor.

A further application of factor analysis is the generation of factor scores, which are values computed for each case representing each of the factors retained. The

factor score for a specific factor is a linear combination of each input variable, which has been standardized for this calculation. As a result, factor scores are standardized variables that estimate the value that each factor would take for each case (22:487-8). These new variables were used in the regression analysis as actual values for the attitudinal factor areas.

In this study three separate factor analyses were accomplished: one each for the Hoppock questions, for the general attitudinal questions, and for the JCI questions.

T-test Between Sample Means

This test is a method for determining whether or not the difference between two sample means is significant. Two types of t-tests were utilized in this study. The first type, the independent sample t-test, was used to test two groups for a significant difference in their responses to certain questions or factors in the survey; for example, SAC pilot job satisfaction was compared with that of other commands. The second type, the paired sample t-test, was used to test for effects of a treatment on the individuals in one group. Measurements before and after a particular treatment generated differences that were analyzed for a significant change. For example, responses to Question 10, retention under the present system, were considered the pretreatment measurement, and responses to Question 74, retention under Dual Track, were considered the posttreatment

measurement--the paired sample t-test then determined whether retention differed significantly under the two systems (22:267).

AID Analysis

There were two reasons for selecting the Automatic Interaction Detection (AID) algorithm as a tool for analyzing the relationships between career intent and its potential predictor variables: first, the predictor variables may be either interval, ordinal, or even nominal-scaled variables; and second, AID can isolate the best predictors to enter the regression equation (33:2,9).

The AID algorithm operates by searching for homogeneous subgroups of the sample population using the criterion variable, career intent in this case, to determine the degree of similarity in each subgroup. From the set of predictor variables AID finds the one variable that best explains the variance in the criterion variable; then AID divides the group, on the basis of the responses to the predictor variable, into two subgroups, each of which now has a new mean value for the criterion variable. As a result, like values of the predictor variable are placed in the same subgroup. The process continues as each new subgroup is considered as a candidate for further splitting on all predictor variables. The process ends when one of several stopping criteria is satisfied (21:p.8-65). The result is a set of mutually exclusive subgroups, arranged in a treelike

structure comprised of information blocks.

Regression Analysis

As it is a relatively common technique for data analysis, regression will receive no lengthy explanation. In this study stepwise regression was employed, wherein variables are entered into the equation sequentially, based on their explanatory power. The order of inclusion is determined by the contribution of each predictor to the explained variance (22:345).

Regression analysis was performed using career intent as the criterion variable and the predictor variables isolated during the AID analysis, as well as certain other variables correlated with career intent. The goal was to determine the exact functional relationship between the predictors and career intent, which revealed the relative strength and importance of each predictor. This information is not provided by AID. In addition, comparison of the two analysis outputs provided crossvalidation of results.

Assumptions

The assumptions on which the survey analysis was based are:

1. The Dual Track Survey is a valid instrument for determining the attitudes and career intentions of Air Force pilots.

2. The individuals taking the survey answered with unbiased responses. Since the anonymity of the respondents was guaranteed, this seems to be a

credible assumption.

Limitations

The following limitations are acknowledged in this study:

1. The sampled group is limited to pilots from two SOS classes.

2. The survey measures expressed career intent---actual retention statistics for the group are not available.

3. Although a "Comments" section was provided in the survey, it is recognized that the majority of the respondents' opinions are expressed only through the questions asked. This places a subtle limitation on the opinions actually expressed.

Summary

This chapter introduced the Dual Track Survey, outlined the procedures used in its analysis, and provided a brief sketch of how they will be integrated in the consideration of effectiveness. The initial stages of the analysis concentrated on summary statistics, with tabled data providing answers to some important survey questions. Then, more involved techniques were used to examine retention and its relationships to predictive factors and the Dual Track System.

CHAPTER 3

COST ANALYSIS METHODOLOGY

Introduction

Personnel are the Air Force's most expensive and valuable resource. A decrease of 27 percent of total Air Force personnel since 1964 has been accompanied by a 77 percent increase in personnel cost (16:24). AFR 36-23 states that pilots are the most valuable asset in terms of investment in Air Force resources (35:p.7-1). Further, the USAF Personnel Plan states that the highest operational cost incurred by the Air Force involves training and education. Consequently, it is justifiable in light of personnel and operational costs to place a premium on pilot utilization (34:p.3-5).

It follows, then, if pilots are an expensive resource, their career management should be carefully screened for both effectiveness and efficiency. Chapter 2 detailed a methodology for examining effectiveness. The survey vehicle is used and is intended to determine whether the Dual Track System would result in improved pilot retention. This chapter will consider the efficiency of that system. The quesion of efficiency is most logically determined by costing out the present management system and

comparing it to the Dual Track System costs. A dollar savings by one system over the other would tend to indicate the management system with the lower cost to be more efficient.

The examination of a new management system does not detract from the fact that pilots are necessary to senior leadership and staff positions. Clearly, the personnel management of the Air Force must allow a portion of the pilot force to leave the cockpit to assume these positions. As stated in Chapter 1, no more than 30 percent of the total pilot force will be considered for transition into Track II of the Dual Track System in this study.

Analysis Methodology

Air Force Military Personnel Center states that it requires three pilots to fill one flying position over a 20 year period (17). This does not imply that all pilots separate from the Air Force after their initial commitment is over. It is true that many do separate, but other pilots leave the cockpit for duties that do not include flying, as well as medical disqualifications. Thus, the total turnover rate of pilots presently requires three pilots to be trained for every position. This number varies slightly with economic conditions experienced in the civilian sector, but has been consistent in the past decade and can be effectively utilized as a planning factor. This three-pilot replacement

cost will be used as a basis for comparison against one Track II pilot and will form the major issue in the economic analysis of this study.

Clearly, there are many different types of aircraft in the Air Force inventory. Analyzing each costing scheme for the pilots of these aircraft is beyond the scope and intent of this study. Therefore, one aircraft was selected for analysis from each of the four predominantly flying major commands: the T-38 from Air Training Command, C-141 from Military Airlift Command, B-52H from Strategic Air Command, and F-15 from Tactical Air Command. These aircraft were selected because they are representative of their commands in terms of mission assignment and perform the lion's share of their respective command's mission.

The costing scheme for each pilot will start with the initial training cost. Pilots of both systems will have identical training costs from Undergraduate Pilot Training (UPT) through in-unit qualification. The costs included in this two year training period are UPT, survival training, specific operational aircraft training, one permanent change of station, and in-unit qualification costs. Contained within UPT costs are all pay and allowances for one year of service at the 0-1 level. Specific operational training costs cover the second year of pay and allowances at the 0-1 level. Also contained in this training cost for F-15 pilots only is fighter lead-in training. After a training cost is

computed for each pilot, costs for Track II pilots of the Dual Track System will differ from the costing scheme for pilots under the present management system. However, this training cost will be the base cost for each pilot position regardless of which management system is examined.

Taking the training costs as a base, a Track II pilot cost will be computed. The Track II pilot receives pay and allowances as an 0-2 for two years and an 0-3 for ten years. At the 14-year point in the Dual Track System, this study assumes that 80 percent of the Track II pilots will be promoted to the 0-4 level. Thus, for the remaining six years of the 20-year period, 80 percent of the Track II pilots will receive pay and allowances of 0-4's, while the remaining 20 percent will receive pay and allowances at the 0-3 level. Retirement pay will be calculated similarly for Track II pilots. Retirement pay for 80 percent of the Track II pilots will be 50 percent of an 0-4's base pay, and the remaining 20 percent will receive one-half of an 0-3's base pay. Consequently, the costs of the Track II pilots of the Dual Track System will have two different entries for each aircraft. One will include training costs plus pay and allowances for a pilot promoted to 0-4, as well as 30 years retirement pay. The other will be the same factors yielding a total cost for a pilot who does not get promoted and remains an 0-3. These two totals will be utilized in arriving at a total force cost and compared to present

management system costs for the same pilot force size.

Present management system costs will start with the same training costs for each aircraft, exactly like Track II pilot costs. At this point, the present management system costs are separated into three pilot groupings by aircraft. These three groupings represent filling one pilot position for 20 years, as stated earlier. The first pilot costs will be spread over six years, and the replacement costs for the subsequent two pilots will be costed over seven years each. This is done for two reasons. First, at the inception of this research a new pilot could expect a total commitment of approximately six years, and that commitment has recently been changed to seven years. This suggests that any replacement for a current pilot would also serve seven years. Secondly, this scenario equalizes the total amount of years of filling a pilot position (20 years) for both pilot management systems under evaluation. Present management system pilots will receive pay and allowances of an 0-2 for two years and an 0-3 until separation at the six or seven year point.

From Track II pilot costs and present management system pilot costs comes the first level of comparison. Totalling the costs to fill one pilot position for 20 years enables the study to evaluate the efficiency of one system relative to the other for that one pilot position in each of the four aircraft. At this level of comparison Track II

costs per pilot at each rank, 0-4 and 0-3, will be compared to present management system costs per pilot to examine efficiency. This step in the analysis simplifies the next level of comparison, that of force level comparisons. Force level comparisons will evaluate the efficiencies of each system in each type aircraft when the cost per pilot in each system is multiplied by the actual number of pilots involved. In force level comparisons the actual number of pilots involved will be 30, 20, and 10 percent of the total pilots in active, primary flying in each aircraft. The 30 percent figure is the target total of pilots in the Dual Track System. The 20 and 10 percent totals that were selected will not only illustrate sensitivity of the cost analysis, but also show a realization that if the Dual Track System were adopted, it would undergo a phase-in period where its efficiency would be different than the target of 30 percent. From the total force comparisons, cost efficiency evaluations will be made on the basis of the least cost to fill flying positions for twenty years.

Collateral Benefits

Collateral benefits need to be identified, but are very difficult to quantify. These benefits go beyond replacement costs, and could be substantial if they were totally calculable. These benefits could be realized in less flying time utilization, potentially fewer accidents, and

lower overhead costs.

Less flying time utilization can be demonstrated if the greater experience of Track II pilots in the Dual Track System warrants some degree of training sortie deletion. This results in dollar savings in aircraft maintenance, supplies, manpower, and costly fuel consumption. There is a real potential for fewer accidents with 30 percent of the pilot cadre continuously serving in cockpit capacities. Accident statistics tend to favor experienced pilots. Overhead can be reduced by lowering the number of supervisory personnel required by flying organizations. Other areas where overhead costs can be reduced are fewer PCS moves, better training derived from a larger experience base, and the creation of a core of local and systems knowledge stemming from long, stabilized tours with the same aircraft and operating base.

Assumptions/Limitations

(1) All pilots entering the economic analysis are assumed to be 0-1's.

(2) In-unit qualifications are based on ten hours flying time. This ten hours varies according to aircraft and command, but is dedicated to nuclear alert training, local orientation, and command-directed training.

(3) All pilots are assumed to take two years to become mission-ready pilots. This standardizes the timing

from UPT through in-unit qualification and simplifies the calculation of pay and allowances, while not detracting from the analytical framework.

(4) Pay and allowances consist of base pay, subsistence allowance, quarters allowance, and flight pay. These dollar amounts are based on current pay scales.

(5) Retirement pay is based on current pay scales.

(6) Recurring training costs are not considered. It is assumed that both groups of pilots will have identical requirements for proficiency training. However, it is likely that Track II pilots would have less recurring training as a result of a larger and longer experience base than the other pilots.

(7) The Track II pilot costing is based on the following parameters: 20 years of active duty pay and 30 years of retirement pay. Retirement pay is based on a life expectancy of 72 years.

(8) Survival training includes Basic Survival and Water Survival Training Course costs.

(9) This study limits promotion to O-4. Eighty percent of the Track II force will be promoted to O-4, while the remaining 20 percent will serve as O-3's.

(10) No inflation adjustments were applied to costs in this study.

Summary

This chapter laid out the methodology to analyze the costs of alternative personnel management systems. The methodology outlined an approach for establishing the efficiency of the Dual Track System compared to the present management system. The system which maintains a given percentage of the primary flying positions in the four aircraft at the least cost will be more efficient. Additionally collateral benefits were discussed. These are additional advantages realized when the Dual Track System operates at a suitable level and length of time to draw on the experienced pilot force it will generate. The assumptions and limitations standardize the data to simplify its presentation and interpretation.

CHAPTER 4

SURVEY ANALYSIS RESULTS

Introduction

This chapter will report the salient results of each part of the survey analysis. First, a number of statistics will be used to describe the sampled group. Second, some relationships of interest and reasons expressed for career decisions will be presented. Then, the factor, retention t-test, AID, and regression results will be discussed. Finally, responses to some general questions dealing with the Dual Track System itself will be analyzed. The survey analysis results will serve as a springboard for the discussion of conclusions about Dual Track System effectiveness in the final chapter of this study.

Demographic Variables

Responses to certain demographic questions are presented in this section to describe the general background of the sampled pilots and to highlight their relatively high level of experience. Of the 242 pilots in the data base, 225 (93%) are Captains, and the remainder are 1st Lieutenants. The reason for this grade distribution is simply the timing of SOS attendance in an officer's career.

Questions 5 and 6 asked for the years of active military service and years as a rated officer, respectively. Tables 4-1 and 4-2 summarize the distributions of the responses to these questions.

One important fact that emerges from comparing these two tables is that the sample contains a large number of pilots with service prior to UPT. By comparing corresponding entries for cumulative percent by year group, it is evident that the level of rated experience is much lower than the level of overall service experience. For example, only 6.2 percent of the sampled pilots have less than 4 years of military service; but 25.2 percent have less than 4 years in the cockpit. Therefore, the sample consists of many pilots with previous nonrated experience. In the authors' view this

TABLE 4-1

YEARS OF MILITARY SERVICE

Years Service	Number of Pilots	Percent of Total	Cumulative Percent
Under 4	15	6.2	6.2
4-5	43	17.8	24.0
5-6	35	14.5	38.5
6-7	53	21.9	60.4
7-8	59	24.4	84.8
8-9	22	9.1	93.9
Over 9	15	6.2	100.0

TABLE 4-2

YEARS AS A RATED OFFICER

Years Rated	Number of Pilots	Percent of Total	Cumulative Percent
Under 4	61	25.2	25.2
4-5	40	16.5	41.7
5-6	49	20.2	61.9
6-7	54	22.3	84.2
7-8	29	12.0	96.2
8-9	5	2.1	98.3
Over 9	4	1.7	100.0

more rounded background should provide a richer perspective with which to judge issues which affect their careers.

Table 4-3 lists the distributions of pilots by major command and by pilot qualification. The qualification levels again illustrate the high level of experience in the sampled group.

Relationships of Interest

The first relationship of interest became apparent through study of the joint frequency distribution of Question 10, career intent under the present system, and Question 74, career intent under the Dual Track System. Table 4-4 presents this data. The response scales for both questions were collapsed into three categories: responses "a", "b",

TABLE 4-3

RESPONSES TO Q3 AND Q4

Q3	Major Command	Number	Percent
1.	Alaskan Air Command	3	1.2
2.	USAF Academy	--	---
3.	Aerospace Defense Command	4	1.7
4.	US Air Forces Europe	12	5.0
5.	AF Logistics Command	--	---
6.	AF Systems Command	4	1.7
7.	Air Training Command	57	23.6
8.	Headquarters USAF	--	---
9.	Military Airlift Command	57	23.6
10.	Pacific Air Forces	5	2.1
11.	Strategic Air Command	54	22.3
12.	Tactical Air Command	42	17.4
13.	Other	4	1.7

Q4	Pilot Qualification	Number	Percent
1.	Flight Examiner	25	10.3
2.	Instructor Pilot	96	39.7
3.	Aircraft Commander	95	39.3
4.	First Pilot	11	4.5
5.	Copilot	15	6.2
	Totals	242	100.0

TABLE 4-4

Q10 - PRESENT CAREER INTENT VS
Q74 - CAREER INTENT UNDER DUAL TRACK

	Q74			
Q10	NO	NOT SURE	YES	Row Totals
NO	6	6	12	24
NOT SURE	1	14	15	30
YES	4	39	145	188
Column Totals	11	59	172	242

and "c" were recoded "YES"; response "d" remained "NOT SURE"; and responses "e", "f", and "g" were recoded "NO".

From the row and column totals basic retention figures can be extracted. At present, 188 (77%) of the pilots have decided to make the Air Force a career. Under the Dual Track System, however, 172 (71%) would make the Air Force a career. At first glance, this reduction in numbers seems to argue against the adoption of Dual Track. However, by considering the overall response changes between the two questions, a different conclusion emerges. Of the 24 pilots who responded "NO" to a career under the present system, 12 (50%) responded "YES" to a career under Dual Track; on the other hand, of the 188 pilots who responded "YES" to a career under the present system, only 4 (2%) changed their answers to "NO" under Dual Track. In addition, of the 30 pilots who responded "NOT SURE" to Question 10, 15 (50%) affirmed a career if Dual Track were to be implemented. Thus, the interrelation between these two questions seems to suggest a more positive career picture under Dual Track, rather than the opposite.

This apparent improvement in the retention picture with Dual Track is not evidenced by any difference in the mean responses to Questions 10 and 74. In fact, the mean responses were almost identical, due principally to the large number of pilots who responded "NOT SURE" to a career under the Dual Track System. This uncertainty is to be expected

about a new system that has never been tried; indeed it may stem, in part, from many respondents' failure to realize that, for 70 percent or more of them, no changes in career planning would result from Dual Track implementation.

A number of interesting relationships became evident when the Hoppock job satisfaction measure and the JCI scores were crosstabulated by the four major flying commands: MAC, SAC, TAC, and ATC. The mean responses for each of these factors listed by command are provided in Table 4-5. The range of the Hoppock measure is from 4 to 28, while the JCI factors take on values from 1 to 5.

TABLE 4-5

HOPPOCK MEASURE AND JCI FACTOR SCORES FOR SELECTED COMMANDS

Command	Hoppock	Autonomy	Feedback	Task Identity
MAC	21.246	3.247	2.912	3.412
SAC	18.722	2.854	2.896	3.483
TAC	21.000	3.429	3.081	3.683
ATC	20.877	3.521	3.193	3.842

Using appropriate t-test procedures to compare mean scores, several interesting conclusions were drawn. For each of the following comparisons the tested level of significance was always less than .02, and in many instances was less than .001. (The level of statistical significance, in general, is

equal to one minus the level of confidence actually obtained in the significance test. Therefore, the lower the level of significance, the more confidence the researcher has that the results obtained are true of the parent population, instead of happening by mere chance.) Results for all the comparison tests in this section are provided in Appendix B.

Most noticeably, the job satisfaction score for SAC pilots is significantly lower than for the other three commands. For statistical purposes the scores for MAC, TAC, and ATC are all equivalent, while the SAC score is more than 2 points lower. The SAC measure of 18.722 compares favorably with the overall Air Force officer job satisfaction score of 18.74 measured by the 1977 USAF Quality of Life Survey (18:30); however, it is below the average score of 20.554 measured by this survey. Whether this matter is a question of high satisfaction in MAC, TAC, and ATC or low satisfaction in SAC awaits further research. One point that may support the latter conclusion is that the SAC autonomy score is also significantly lower than that of the other three commands.

By comparing JCI scores within each command depicted, another significant conclusion was drawn. In every command but SAC the level of feedback given pilots is significantly lower than the corresponding levels of autonomy and task identity. In SAC both feedback and autonomy are lower than task identity. Apparently, pilots in all four commands experience relatively high levels of task identity, the

ability to identify with a completed effort; and MAC, TAC, and ATC pilots have a high level of autonomy. However, feedback on pilot performance is lacking in comparison to the other characteristics. This is clearly an area that deserves management attention, for as Hackman and Lawler pointed out, individuals are ". . . able to obtain meaningful personal satisfaction when they perform well on jobs which they experience as high on variety, autonomy, task identity, and feedback [15:267]."

Reasons Expressed for Separation

Questions 19 and 20 asked the respondent to choose, from a list of 19 possible reasons, the first and second most important reasons for deciding to separate from the Air Force prior to retirement. The absolute and relative frequencies for the most common responses to these questions are listed in Table 4-6. The only cases chosen for analysis (54 pilots) were those whose present career intent (Question 10) was undecided or negative. During the frequency computation response "a" ("Not applicable: I intend to remain in the Air Force") was treated as missing data.

Reasons Expressed for Career

As in the previous section Questions 37 and 38 were analyzed for the most important reasons expressed for deciding on an Air Force career. Only those cases were

TABLE 4-6

REASONS EXPRESSED FOR SEPARATION
(Sample size: 54 pilots)

Q19 #1 REASON FOR SEPARATION Response	Absolute Frequency	Relative Frequency (%)
k. Family life disruptions	17	31.5
f. Inadequate pay and allowances	9	16.7
l. Excessive non-flying requirements	5	9.3
g. Lack of career progression	4	7.4
p. USAF management and policies	4	7.4

Q20 #2 REASON FOR SEPARATION Response	Absolute Frequency	Relative Frequency (%)
p. USAF management and policies	12	22.2
f. Inadequate pay and allowances	10	18.5
k. Family life disruptions	5	9.3
l. Excessive non-flying requirements	5	9.3

chosen for analysis whose present career intent was positive. Table 4-7 lists the results for the most common responses.

Factor Analysis Results

As discussed in Chapter 2, the factor analysis was conducted in three steps. First, the four Hoppock questions (15-18) were analyzed for high loadings on a single factor, job satisfaction. Second, the JCI questions (22-36) were checked for relationships between the variables and the three postulated job characteristic dimensions. Finally, the factor analysis of the general attitudinal questions (39-70) consisted of a two-phase process: first, the data were

TABLE 4-7

REASONS EXPRESSED FOR CAREER
(Sample size: 188 pilots)

Q37 #1 REASON FOR CAREER Response	Absolute Frequency	Relative Frequency (%)
l. Opportunity to fly	48	25.5
f. Like USAF way of life	36	19.1
m. Desire to serve country	29	15.4
j. Opportunity for varied jobs	12	6.4
c. Opportunity for career as pilot	11	5.9
e. Retirement benefits	11	5.9
Missing cases	(3)	(1.6)

Q38 #2 REASON FOR CAREER Response	Absolute Frequency	Relative Frequency (%)
l. Opportunity to fly	39	20.7
m. Desire to serve country	20	10.6
f. Like USAF way of life	16	8.5
c. Opportunity for career as pilot	14	7.4
i. Job security	12	6.4
j. Opportunity for varied jobs	12	6.4

analyzed to determine what factors would be retained; and second, scores for these factors were generated and added to the data base on a case-by-case basis for later analysis. Precise factor scores were considered preferable for these areas, since they have not received the considerable validation that the Hoppock and JCI factors have undergone.

Tables 4-8, 4-9, and 4-10 are provided at this point to summarize the results of the three factor analyses. Each table lists the factor names, their associated question numbers, and the factor loadings. The reader should note

that the response scales for several of the questions, as denoted in Chapter II, were reversed for the analysis, which results in positive loadings for every question, even though some are negative in content or meaning. The SPSS default criterion was used to determine the number of factors retained, whereby each factor must have an eigenvalue of at least 1.00. Then, each factor was considered to be "defined" by the questions for which the factor loadings were at least .5000.

The retained factors for the Hoppock measure and the JCI dimensions were defined exactly as they were outlined in Chapter II. A set of 10 factors was retained for the general attitudinal questions, and each was easily interpreted along the lines of the previously defined attitudinal factors.

A complete listing of the rotated factor matrices and factor score coefficient matrices is included as Appendix C.

Retention T-test Results

Questions 10 and 74 requested the career intent of the respondent under the present system of career management and under the Dual Track System, respectively. The paired sample t-test was utilized to test the null hypothesis of no significant difference between the mean responses to these questions. The test was performed on three different groupings of the sample data. First, the complete set of data was analyzed. Then, the data base was divided into two

TABLE 4-8

HOPPOCK JOB SATISFACTION FACTOR

Question	Factor Loading
15	.80746
16	.87649
17	.70972
18	.86362

TABLE 4-9

JOB CHARACTERISTICS INVENTORY FACTORS

AUTONOMY

Question	Factor Loading
22	.79422
25	.69618
27	.58786
29	.85616
32	.75848
35	.56772

TASK IDENTITY

Question	Factor Loading
23	.80398
30	.70154
33	.88956
36	.84915

FEEDBACK

Question	Factor Loading
24	.82135
26	.86736
28	.87607
31	.82743
34	.71739

TABLE 4-10

ATTITUDINAL FACTORS (Q39-Q70)

AIRCRAFT COMMANDER AUTHORITY

Question	Factor Loading
42	.52328
61	.82676
63	.80966

ADDITIONAL DUTIES

Question	Factor Loading
39	.74704
52	.76699
69	.59870

EROSION OF BENEFITS

Question	Factor Loading
48	.84235
50	.81235

FLIGHT PAY

Question	Factor Loading
55	.81154
57	.60240
58	.85063

AIRLINE INTEREST

Question	Factor Loading
41	.81487
65	.69620
68	.51964

TABLE 4-10
(continued)

INSTITUTIONAL COMMITMENT

Question	Factor Loading
44	.79902
45	.80631
47	.69683
53	.58639

OER SYSTEM

Question	Factor Loading
49	.79270
60	.77585

PROMOTION SYSTEM

Question	Factor Loading
40	.79031
43	.78894
46	.74901
51	.71655
54	.54177

SECURITY OF FUTURE

Question	Factor Loading
56	.72647
64	.74325
66	.54537
67	.72906

UP-OR-OUT POLICY

Question	Factor Loading
62	.86672
70	.77155

mutually exclusive subgroups for further analysis, and each of these subgroups was tested individually.

The results of the test on the entire data base are presented in Table 4-11. The null hypothesis is overwhelmingly accepted: there is no reason to believe that there would be any difference in retention under either system. (As discussed in Chapter 2, the response scales for both questions were reversed during the statistical analysis. As a result, low figures represent low career intent and vice versa.)

TABLE 4-11

RESULTS OF RETENTION T-TEST (1)
(Entire sample)

Question	Number of Cases	Mean	S.D.	Difference Mean	Difference S.D.	T Value	Prob.
10	242	5.401	1.34	.004	1.39	.05	.963
74		5.397	1.27				

[Response scale: 1-7]

Next, the data were divided on the basis of responses to Question 10: Group 1 consisted of those who had responded either "d", "e", "f", or "g" and were therefore considered as either undecided about or against a career in the Air Force; and Group 2 consisted of those with responses of "a", "b", or "c", indicating positive career intent. The results of the t-tests on these two groups is presented in Table 4-12.

TABLE 4-12

RESULTS OF RETENTION T-TEST (2)
(Grouped by response to Q10)

	Ques	Number of Cases	Mean	S.D.	Difference Mean	Difference S.D.	T Value	Prob.
GROUP 1	10	54	3.39	.81	-1.24	1.41	-6.45	.000
	74		4.63	1.25				
GROUP 2	10	188	5.98	.79	.36	1.16	4.28	.000
	74		5.62	1.19				

[Response scale: 1-7]

These figures portray a statistically significant change in career intent for both groups. Group 1, the undecided and noncareer pilots, expresses a much higher career intent under Dual Track, while Group 2, the career pilots, indicates just the opposite. At first glance, then, the tests appear to cancel each other out. However, by comparing the magnitude of each change an important distinction arises. The mean retention for Group 1 improves from 3.39 under the present system to 4.63 under Dual Track, an increase of more than one point on the response scale (and effectively changing their intent from "Leaning toward not . . ." to "Leaning toward . . ." an Air Force career). In contrast, the mean retention for Group 2 declines from 5.98 at present to 5.62 under Dual Track, a reduction of less than one-half point. Therefore, the much higher increase in retention for Group 1 seems to offset the slight reduction in retention among Group 2.

AID Analysis Results

The results of the AID analysis are presented in Figure 4-1. Career intent (Question 10) is the criterion variable, and the AID program selected predictor variables as indicated. Each box apart from the original represents a subgroup of the sample data. When examining the characteristics of a subgroup, each split that led from the original group out to the subgroup must be included in its interpretation; that is, the subgroup must be defined by the characteristics of its complete branch (21:p.8-59). For convenience, the following information is depicted for each subgroup:

1. An abbreviated identifier for the predictor variable used in the split.

2. In parentheses, the values of the predictor variable represented by the subgroup.

3. The subgroup size.

4. The average career intent score.

5. The cumulative R^2 (fraction of variance explained) of all splits performed up to that point.

6. In brackets, the subgroup number.

The level of statistical significance was not included for any split, since it was always better than .03 and was usually below .01.

The initial split in the analysis identified job satisfaction as the primary factor, with the upper branch

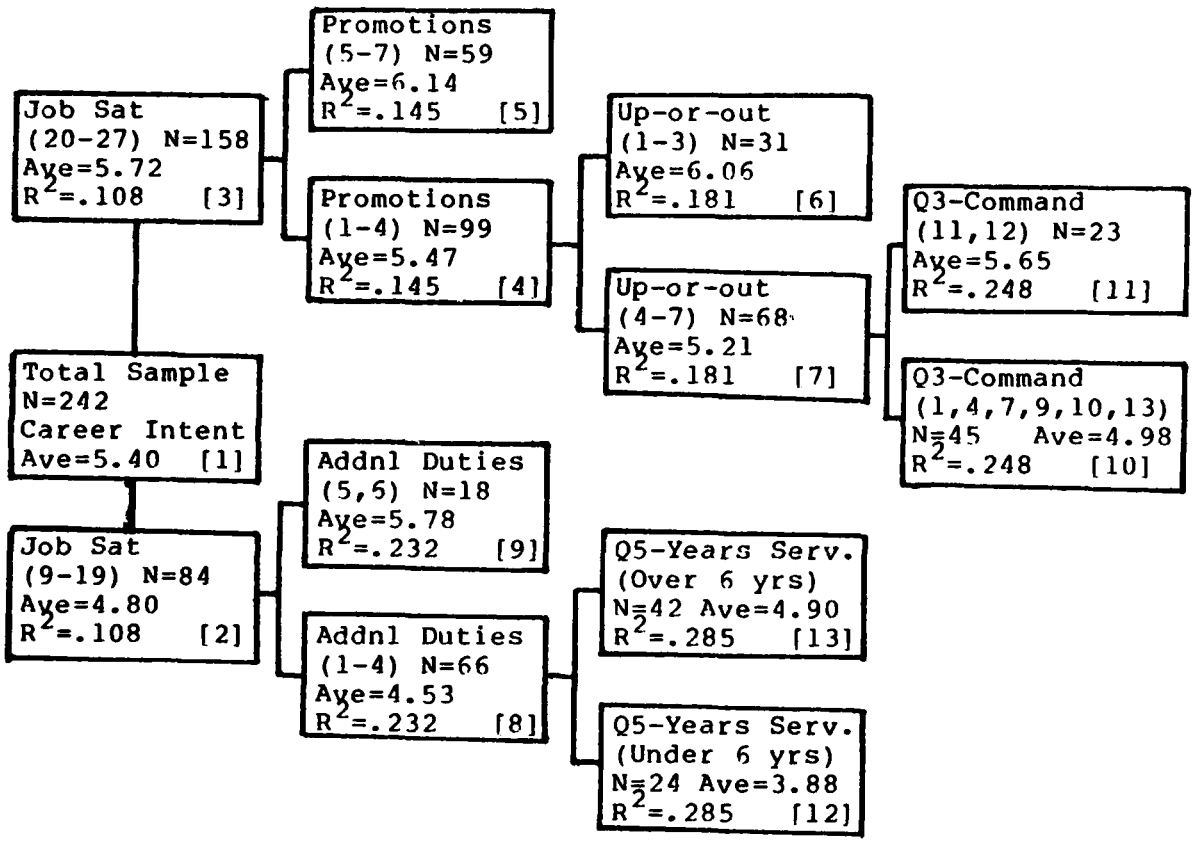


FIGURE 4-1. CAREER INTENT AID MODEL

having a Hoppock score of 20 or higher, and the lower branch a score of 19 or lower. Since the mean job satisfaction for the total sample was 20.6, this split seems to be very reasonable. Further splits in the data involved attitudes toward the Air Force promotion system, additional duties, and the up-or-out policy, as well as two demographics, major command and years of military service.

Subgroup 5 consists of those pilots with the highest career intent. They have relatively high job satisfaction and believe that the Air Force promotion system is effective and fair.

Subgroup 12 expresses the lowest career intent in the tree. These pilots have relatively low job satisfaction, think that additional duties should not be a required element of a pilot's career, and have less than 6 years of active military service.

The split that forms subgroups 10 and 11 reveals an interesting interaction among factors. Both groups are characterized by high job satisfaction, a negative feeling about the fairness and effectiveness of the promotion system, and the attitude that flying is more important to them than getting promoted. Subgroup 11, however, consisting of 23 SAC and TAC pilots, expresses a higher career intent than subgroup 10, which includes pilots from MAC, ATC, USAFE, and several other commands. Apparently, there are compensating factors not depicted that influence these SAC and TAC pilots

toward a career in the Air Force. (Note: Neither subgroup includes all the pilots from any one command.)

The fraction of variance explained by the AID model was low, approximately 28.5 percent of the total. This low R^2 value can be explained in two ways. First, the criterion variable is skewed toward high career intent, and therefore there are fewer cases on the low side with which to form meaningful subgroups. Second, the factors addressed by the survey simply do not account for all the things that pilots consider when deciding on an Air Force career. Other factors besides these enter into this decision.

Regression Analysis Results

This section presents the results of the multiple regression analysis with present career intent as the criterion variable. Predictor variables chosen for the analysis were those which appeared in the AID model and several others which had a strong correlation with career intent. For variables to enter and remain in the regression equation, a minimum F value of 2.0 was required.

Table 4-13 presents the results of the regression analysis. The actual equation would be constructed using the regression coefficients listed; however, the relative importance of each variable can best be gauged by comparing the beta weights, or standardized coefficients.

TABLE 4-13

CAREER INTENT REGRESSION MODEL

Factor	Regression Coefficient	Beta Weight	R^2	R^2	F Value	Significance
Hoppock Job Sat	.098	.235	.134	.134	14.8	.000
Q5-Years Service	.144	.191	.181	.047	12.0	.001
Addnl Duties	.287	.214	.216	.035	14.4	.000
Inst Commitment	.250	.186	.243	.027	10.3	.001
Up-or-out	-.201	-.150	.266	.023	7.5	.007
Airline Interest	-.209	-.156	.288	.022	7.8	.006
Promotion System	.185	.138	.307	.019	6.3	.013
(Constant)	2.813				24.9	.000

Dependent variable: Q10 - Career Intent

N=242
Significance of model: .000

R^2= .307

As in the AID model the Hoppock job satisfaction measure appears as the strongest predictor of career intent, explaining 13.4 percent of the total variance. The next three predictors, which have comparable beta weights, are years of military service, attitude toward the importance of additional duties to a career, and the strength of commitment to the Air Force as an institution. The inclusion of the additional duty factor as a relatively strong predictor in the equation was expected, since it appeared strongly in the AID model. By referring again to Figure 4-1 and subgroup 8, one can see a sizable group (27 percent of the total sample) of pilots with low job satisfaction for whom additional duties are a primary cause of lower than average career intent. The next two predictors in the regression model are primarily concerned with flying: attitudes toward the up-or-out policy, or how strongly the respondents agree that flying is more important to them than promotions; and interest in the airlines as an employment alternative to the Air Force. Both are represented by negative coefficients: airline interest obviously detracts from interest in a career; also, pilots who consider flying more important than being promoted express a lower career intent, probably because, as was discussed in Chapter 1, they have sensed that flying in itself does not lead to career progression in the Air Force. The final predictor in the equation is the attitude toward the promotion system.

Although these variables are significant predictors of the career intent of Air Force pilots, they explain only 30.7 percent of the variance in the career intent variable. Again, as with the AID analysis, the need for additional factors to explain career intent is indicated.

Attitudes Toward the Dual Track System

In the concludng portion of the survey some general questions regarding implementation of the Dual Track System were posed. Question 71 was principally used as a crosscheck on responses to the two career intent questions, 10 and 74. Responses to Question 72 were exactly split between "Agree" and "Disagree" that Dual Track would solve the fundamental problems that influence pilots to leave the Air Force. However, the responses to Question 73 were much more one-sided: 54 percent of the pilots agreed that a dual track system would be an effective way of handling the present system's inadequacies, while only 26 percent disagreed. The reaction to Question 76 was similar, although not quite as one-sided. Asked if any form of dual track system would be better than the present system, 43 percent agreed and 24 percent disagreed. Lastly, Question 75 identified a possible shortcoming to a dual track system, that career pilots could eventually dominate the most qualified crew positions, leading to cockpit stagnation. There was strong agreement (61 percent agreed and 24 percent disagreed) that this

problem would occur.

Overall, the results of this section were too divided to make any clear assertions about possible acceptance of the Dual Track System. Further research along these lines will be recommended in the concluding chapter of this study.

CHAPTER 5

COST ANALYSIS RESULTS

Introduction

This chapter will report the results of the comparison of the Dual Track System and the present management system costs. The comparison centers on the examination of Track II pilots of the Dual Track System versus pilots of the present management system. The cost analysis will evaluate whether it is more economically efficient to train and pay a Track II pilot or train and pay three pilots under the present management system. This analysis uses the methodological approach outlined in Chapter 3. Initial training costs for pilots of both systems establish a common cost base; added to this base will be career costs for pilots of both systems. This provides a cost comparison for one pilot of each system. Multiplying the cost per pilot by the total number of pilots involved allows the total force comparison of Track II pilots of the Dual Track System and the present management system pilots.

The final section of this chapter examines collateral benefits attainable within the Dual Track System framework. The major collateral benefit is the experience garnered for the Air Force by a professional pilot cadre. These benefits

are difficult to quantify precisely, but tend to increase the efficiency of the Dual Track System.

Training Costs

Training costs are sustained for each pilot becoming mission-ready in each of the four aircraft examined. Tables 5-1 through 5-4 show the cost calculations for pilots of both systems through their first two years of active duty.

The cost components added together to arrive at a training cost are as follows:

Undergraduate Pilot Training (UPT)
Survival Training
Permanent Change of Station (PCS)
Specific Operational Training
In-Unit Qualification Training
Fighter Lead-In Training (F-15 only)

In-unit qualification training costs result from the utilization of ten hours flying time multiplied by the hourly cost to operate each aircraft specified in AFR 173-13 (36:p.3-9). All other components are average costs. The total represents the cost to train one pilot in each aircraft. The total will be carried over to the costing tables for both management systems.

TABLE 5-1

T-38 TRAINING COSTS

UPT	$206,525
Survival Training	2,869
PCS	4,826
Specific Operational Training	81,322
In-Unit Qualification Training	8,030
Total	$303,572

TABLE 5-2

C-141 TRAINING COSTS

UPT	$206,525
Survival Training	2,869
PCS	4,826
Specific Operational Training	150,581
In-Unit Qualification	30,740
Total	$395,541

TABLE 5-3

B-52H TRAINING COSTS

UPT	$206,525
Survival Training	2,869
PCS	4,826
Specific Operational Training	236,352
In-Unit Qualification	68,390
Total	$518,962

TABLE 5-4

F-15 TRAINING COSTS

UPT	$206,525
Survival Training	2,869
PCS	4,826
Specific Operational Training	954,000
In-Unit Qualification	46,000
Fighter Lead-In Training	93,000
Total	$1,307,220

The preceding tables illustrate that the cost for each pilot is identical for the first year. A wide disparity occurs in the following year of specific operational training. The total training cost to produce a mission-ready pilot will have a major impact on the efficiency issues addressed later in this chapter. For a Track II pilot this training cost is a one-time cost. Training costs are also a one-time cost for the first pilot trained in the present

management system, but are replacement costs for the next two pilots.

Dual Track System Costs

Dual Track System costs add training costs to 20 years of pay and allowances (P & A) and 30 years of retirement pay (RP) to derive a total cost for each Track II pilot in all four aircraft. Pay and allowances and retirement pay are computed in dollar figures for FY81 (36:p.3-9). These figures are not adjusted for inflation.

An assumption of the study was an 80 percent promotion rate to major (0-4). Consequently, two tables are listed for each aircraft. Tables 5-5, 5-7, 5-9, and 5-11 show Track II pilots in each aircraft who were promoted to O-4 at the fourteen year point. Tables 5-6, 5-8, 5-10, and 5-12 illustrate the costs for pilots who remain captains (0-3) from the four-year point until retirement. In each aircraft the difference between ranks is $75,872 spread over 50 years of active duty and retirement.

TABLE 5-5

T-38 TRACK II COSTS, 0-4

Training Costs	$ 303,572
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-14)	297,580
P & A, 0-4 (Yrs 14-20)	215,574
RP, @ 0-4 (30 Yrs)	413,586
Total	$1,274,449

TABLE 5-6

T-38 TRACK II COSTS, 0-3

Training Costs	$ 303,572
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-20)	493,246
RP, @ 0-3 (30 Yrs)	357,642
Total	$1,198,597

TABLE 5-7

C-141 TRACK II COSTS, 0-4

Training Costs	$ 395,541
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-14)	297,580
P & A, 0-4 (Yrs 14-20)	215,574
RP, @ 0-4 (30 Yrs)	413,586
Total	$1,366,418

TABLE 5-8

C-141 TRACK II COSTS, 0-3

Training Costs	$ 395,451
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-20)	493,246
RP, @ 0-3 (30 Yrs)	357,642
Total	$1,290,566

TABLE 5-9

B-52H TRACK II COSTS, 0-4

Training Costs	$ 518,692
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-14)	297,580
P & A, 0-4 (Yrs 14-20)	215,574
RP, @ 0-4 (30 Yrs)	413,586
Total	$1,489,569

TABLE 5-10

B-52H TRACK II COSTS, 0-3

Training Costs	$ 518,692
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-20)	493,246
RP, @ 0-3 (30 Yrs)	357,642
Total	$1,413,717

TABLE 5-11

F-15 TRACK II COSTS, 0-4

Training Costs	$1,307,220
P & A, 0-2 (Yrs 2-4)	44,137
P & A, 0-3 (Yrs 4-14)	297,580
P & A, 0-4 (Yrs 14-20)	215,574
RP, @ 0-4 (30 Yrs)	413,586
Total	$2,278,097

TABLE 5-12

F-15 TRACK II COSTS, 0-3

Training Costs	$1,307,220
P & A, 0-2 (2-4)	44,137
P & A, 0-3 (Yrs 4-20)	493,246
RP, @ 0-3 (30 Yrs)	357,642
Total	$2,202,245

Present Management System Costs

This section takes the training costs and adds to them pay and allowances for three pilots for 20 years. Tables 5-13 through 5-16 show the cost of the first pilot for six years and the two replacement pilots for seven years each. Each table represents the total cost for the present management system to fill one flying position for 20 years.

TABLE 5-13

T-38 PRESENT MANAGEMENT SYSTEM COSTS

1st Pilot (Yrs 0-6)		
Training Costs	$303,572	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-6)	53,718	
Sub Total		$ 401,427
2nd Pilot (Yrs 6-13)		
Training Costs	$303,572	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$ 430,498
3rd Pilot (Yrs 13-20)		
Training Costs	$303,572	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$ 430,498
Total		$1,262,423

TABLE 5-14

C-141 PRESENT MANAGEMENT SYSTEM COSTS

1st Pilot (Yrs 0-6)		
Training Costs	$395,541	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-6)	53,718	
Sub Total		$ 493,396
2nd Pilot (Yrs 6-13)		
Training Costs	$395,541	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$ 522,467
3rd Pilot (Yrs 13-20)		
Training Costs	$395,541	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$ 522,467
Total		$1,538,330

TABLE 5-15

B-52H PRESENT MANAGEMENT SYSTEM COSTS

1st Pilot (Yrs 0-6)		
Training Costs	$518,692	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-6)	53,718	
Sub Total		$ 616,547
2nd Pilot (Yrs 6-13)		
Training Costs	$518,692	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$ 645,789
3rd Pilot (Yrs 13-20)		
Training Costs	$518,692	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$ 645,789
Total		$1,908,143

TABLE 5-16

F-15 PRESENT MANAGEMENT SYSTEM COSTS

1st Pilot (Yrs 0-6)		
Training Costs	$1,307,220	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-6)	58,718	
Sub Total		$1,409,075
2nd Pilot (Yrs 6-13)		
Training Costs	$1,307,220	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$1,434,146
3rd Pilot (Yrs 13-20)		
Training Costs	$1,307,220	
P & A, 0-2 (Yrs 2-4)	44,137	
P & A, 0-3 (Yrs 4-7)	82,789	
Sub Total		$1,434,146
Total		$4,277,367

With these costs and Track II costs computed, a basis for comparing one pilot from each system is established. The next section will make this comparison.

Cost Comparison

This section places the cost figures from the previous tables side-by-side to provide a graphic comparison of the two systems. The cost comparison table shows which system is the most economically efficient for the Air Force. The efficiency column of Table 5-17 designates the most efficient system and is followed by two dollar totals. The

two dollar totals are necessary as a result of Track II pilots receiving 80 percent promotions to O-4. In the C-141, B-52H, and F-15 the Track II pilots are more efficient and both dollar totals reflect the superior efficiency of Track II over the present management system. In the case of the T-38, the present management system costs less than for a Track II pilot promoted to O-4. However, the Track II pilot not promoted to O-4 is less expensive than the present management system pilot in the T-38. The final column of Table 5-17 shows the aggregate totals of savings. In all aircraft analyzed, Track II showed a cost savings over the present management system.

While Table 5-17 provides a direct comparison between the two systems, it demonstrates only the relative efficiency for one pilot position over a 20 year period. The next section of this chapter will consider the efficiency of larger percentages of the pilot force for each aircraft in the study.

Force Cost Comparisons

Chapter 4 analyzed the survey results and discovered that 50 percent of those pilots who are leaning toward or are definitely separating from the Air Force would make the Air Force a career if the Dual Track System were implemented.

TABLE 5-17

COST COMPARISON OF ONE PILOT IN EACH SYSTEM

Type Aircraft	Present Mgt System	Dual Track System Track II,O-4	Dual Track System Track II,O-3	Most Efficient (Savings)	Aggregate Savings With Dual Track
T-38	$1,262,433	$1,274,449		Present Mgt ($12,026)	
			$1,198,507	Dual Track ($63,826)	$ 51,800
C-141	$1,538,330	$1,366,418	$1,290,566	Dual Track (171,912/247,764)	$ 419,676
B-52H	$1,908,143	$1,489,569	$1,413,717	Dual Track (418,574/494,426)	$ 913,000
F-15	$4,277,367	$2,278,097	$2,202,245	Dual Track (1,999,270/ 2,075,122)	$4,074,392

These pilot positions would have to be replaced at the high costs shown on previous tables. Also, the survey's results indicate that the 50 percent retention of probable and definite resignees allow a large pool for selection into the 30 percent Track II pilot force of the Dual Track System. Thus, the total cost implications of having a 30 percent Track II pilot force is analyzed in this section and compared with the present management system. For sensitivity analysis, this section also examines a 20 percent and 10 percent Track II pilot force for the four aircraft.

For this analysis, pilots with a Rated Position Indicator of 1(RPI 1) were considered; these pilots' duties consist primarily of flying. Tables 5-18, 5-19, and 5-20 specify the total number of RPI 1 pilots in each aircraft (17). Further, these tables include the number of pilots who would be in Track II at 30, 20, and 10 percent force levels, respectively.

TABLE 5-18

30% TRACK II PILOT FORCE IN DUAL TRACK SYSTEM

Type Aircraft	Total RPI 1 Pilots	Total Track II Pilots (30%)	Track II O-4(80%)	Track II O-3(20%)
T-38	638	191	153	38
C-141	936	281	225	56
B-52H	756	227	182	45
F-15	700	210	168	42

TABLE 5-19

20% TRACK II PILOT FORCE IN DUAL TRACK SYSTEM

Type Aircraft	Total RPI 1 Pilots	Total Track II Pilots (30%)	Track II O-4(80%)	Track II O-3(20%)
T-38	638	128	102	26
C-141	936	187	150	37
B-52H	756	151	121	30
F-15	700	140	112	28

TABLE 5-20

10% TRACK II PILOT FORCE IN DUAL TRACK SYSTEM

Type Aircraft	Total RPI 1 Pilots	Total Track II Pilots (30%)	Track II O-4(80%)	Track II O-3(20%)
T-38	638	64	51	13
C-141	936	94	75	19
B-52H	756	76	61	15
F-15	700	70	56	14

Tables 5-21, 5-22, and 5-23 show the total force cost comparisons broken out by aircraft and totalled. The present management system costs indicate the costs to fill a pilot position for 20 years utilizing the concept of training three pilots for each position. The present management system cost figures reflect the total dollar amounts from Tables 5-13 through 5-16 multiplied by the number of pilots in each Track II manning level scenario, as specified in Tables 5-18 through 5-20. The costs for Track II are calculated similarly, except these costs are broken into different ranks

TABLE 5-21

30% TRACK II PILOT FORCE COST SAVINGS

Type Aircraft	Present Mgt Costs	Track II Costs O-4	Track II Costs O-3	Track II Costs Total	Dollars Saved
T-38	$241,122,793	$194,990,677	$45,546,686	$240,537,383	$ 585,410
C-141	432,270,730	307,444,050	72,271,696	379,715,746	52,554,984
B-52H	433,148,461	271,101,558	63,617,265	334,718,823	98,429,638
F-15	898,247,070	382,720,296	92,494,290	475,214,586	423,032,484
Total					$574,602,516

TABLE 5-22

20% TRACK II PILOT FORCE COST SAVINGS

Type Aircraft	Present Mgt Costs	Track II Costs O-4	Track II Costs O-3	Track II Costs Total	Dollars Saved
T-38	$161,590,144	$129,993,798	$31,163,522	$161,157,320	$ 432,824
C-141	287,667,710	204,962,700	47,750,940	252,713,642	34,954,068
B-52H	288,129,593	180,237,849	42,211,510	222,649,359	65,480,234
F-15	598,831,380	225,146,854	61,662,860	316,809,714	282,021,666
Total					$382,888,792

TABLE 5-23

10% TRACK II PILOT FORCE COST SAVINGS

Type Aircraft	Present Mgt Costs	Track II Costs			Dollars Saved
		O-4	O-3	Total	
T-38	$ 80,795,072	$ 64,996,899	$15,581,761	$ 80,578,660	$ 216,412
C-141	144,603,020	102,481,350	24,520,754	127,002,104	17,600,916
B-52H	145,018,868	90,863,709	21,205,755	112,069,464	32,949,404
F-15	299,415,690	127,573,432	30,831,430	158,404,862	141,010,828
Total					$191,777,560

attainable in this system and totalled. The costs for an individual Track II pilot are taken from Tables 5-5 through 5-12 and multiplied by the number of 0-4 and 0-3 Track II pilots using the 30, 20, and 10 percent force scenarios.

In each scenario, Track II pilot forces showed cost savings when compared to the present management system. A 30 percent Track II pilot force resulted in a cost saving of $574,602,516. As the size of the Track II pilot force decreased, the savings also decreased. At 20 and 10 percent Track II pilot force levels, the savings were $382,888,792 and $191,777,792, respectively.

It must be kept in perspective that these cost savings, while large, are only for four aircraft. These aircraft are neither the least nor the most expensive to train pilots to fly. Ostensibly, an aircraft less complex and expensive to train in than the T-38 would reveal the Dual Track System to be more expensive under an examination similar to this one. However, aircraft planned for the future appear to be increasing in complexity, which translates into increasing costs. These costs coupled with spiralling fuel costs and inflation will almost certainly drive initial training and replacement costs upward. Strategic Air Command predicts each pilot in the next generation bomber will cost $2.5 million in initial training prior to operational qualification (28). Furthermore, considering that there are 18,386 RPI 1 pilots in the Air

Force, a greater cost efficiency seems possible in the areas of pilot utilization and training skills pay-back (17).

Collateral Benefits

In addition to a reduction in high replacement costs, other benefits of the Dual Track System may be realized. Fewer aircraft accidents, less flying time utilization, and reduced overhead can be quantified to some extent and analyzed.

Aircraft accidents happen at a much greater frequency to less experienced pilots. In fact, pilots below the average flying time of 1458 flight hours have over four times the number of accidents that their more experienced counterparts have (3:54). The flyaway costs of the aircraft in this study alone are large enough to cause consideration of this point. See Table 5-24 (36:p.2-10).

TABLE 5-24

AIRCRAFT FLYAWAY COSTS

Type Aircraft	Flyaway Costs
T-38	$ 2.6M
C-141	19.9
B-52H	36.7
F-15	16.8

To lose one of these aircraft represents a large loss in terms of both military capability and opportunity costs. Pilots who serve continuously in cockpit duties for their entire career will certainly have more experience than those

pilots who leave the cockpit for non-flying duties. Thus, a more experienced pilot force should reduce accidents and save the Air Force money.

Less flying time expended would save a considerable amount of money. The experience level of a Track II pilot could conceivably allow the deletion of one sortie per month per pilot, which could eventually result in the savings of millions of dollars. For example, a B-52H averages 8.5 hours per sortie. The cost per hour is $7,693 (36:p.2-2). The sortie cost, then, is $65,391 and the annual savings per pilot is $784,692. Multiply this by all Track II pilots flying the B-52H and the savings is $178,123,720 per year. Since 60 percent of the cost of an operational sortie is in fuel costs, and fuel costs are rising steadily, it is likely that the annual savings will rise, also. The experience generated by implementation of the Dual Track System would pay multiple dividends in this instance.

Overhead cost reduction occurs in areas such as decreased PCS moves. Each PCS move costs the Air Force an average of $4,826 (36:p.3-9). Presently, a pilot can expect a minimum of five PCS moves in a 20 year career. Assuming the Dual Track System were implemented and 30 percent of all RPI 1 pilots made just one less PCS move in their 20 year career, a savings of $26,619,251 would be accrued. In fact, with the Dual Track System and its limited PCS movement feature, three or four PCS moves per pilot would be

eliminated. Realistically, then, the total savings from limited PCS movement would be between $80 million and $106 million. This cost savings, like potentially fewer aircraft accidents and less flying time utilization, releases vast sums of money for use in other areas.

Summary

This chapter examined the efficiency of the Dual Track System compared to the present management system. The major issue in the comparison was the cost of career and retirement pay for a Track II pilot versus the costs of training and paying three pilots for that same flying position under the present management system. In all four aircraft examined in this study, the Dual Track System was more efficient. Cost savings ranged from $585,410 in the T-38 to $423,032,484 in the F-15 at 30 percent Track II pilot force levels. At smaller percentage force levels, the savings decreased. However, the savings remained significant enough to warrant consideration for implementation.

Collateral benefits from the Dual Track Systems were discussed. Lower accident rates, less flying time utilization, and decreased overhead costs are the principal benefits. These benefits have the potential to amount to hundreds of millions of dollars and enhance the efficiency of the Dual Track System. Collateral benefits allow Air Force planners the latitude to divert funds from traditional uses,

such as sortie utilization and PCS costs, to other areas where increased funding is needed.

CHAPTER 6

CONCLUSIONS/RECOMMENDATIONS

Introduction

This study has defined an alternative personnel system for the management of one group of Air Force officers, pilots, while not attempting to dismantle the entire infrastructure of the Air Force personnel system. The alternative personnel system, the Dual Track System, was designed to combine elements of the present career management policies with the concept of a career pilot force in a program that would be acceptable to Air Force pilots and that would save money. The proposed system was analyzed through a two-tiered approach: first, the relative effectiveness and second, the relative efficiency of the proposed system were compared with those of the career management policies now in use.

The analysis of effectiveness was conducted by use of a survey vehicle which sought views about both systems from Air Force pilots in the early stages of their careers. The responses of these pilots established a data base for statistical evaluation. The Dual Track System would be considered effective, then, if this evaluation revealed that pilot retention would remain the same or increase.

The analysis of efficiency was intended to determine if the Dual Track System could be operated at or below the costs of the present system. Dual Track would be deemed more efficient if it resulted in decreased costs. Four aircraft types, one from each of the major flying commands, were selected for the analysis.

Chapters 2 and 3 explained the methodologies employed to analyze the survey data for system effectiveness and the cost data for system efficiency, respectively. In turn, Chapters 4 and 5 reported the results of the two analyses. This chapter will present the conclusions of both and discuss the potential impact of the Dual Track System on the effectiveness and efficiency of the Air Force pilot management system.

Effectiveness of the Dual Track System

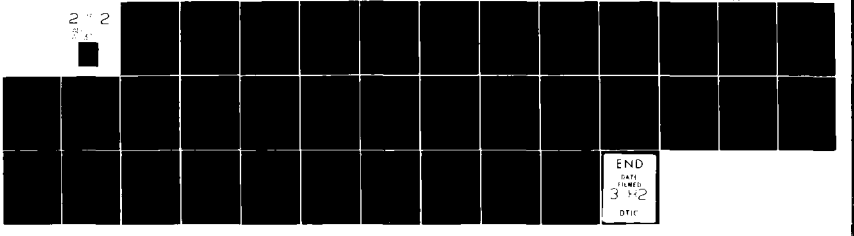
The results of the survey analysis lend strong credence to the effectiveness of the Dual Track System in the perception of Air Force pilots. The opinions expressed by the sample group left no doubt that Dual Track would be at least as effective as the present career management policies; and when career intent under both systems was studied, the Dual Track System seemed to show a slight edge in retention.

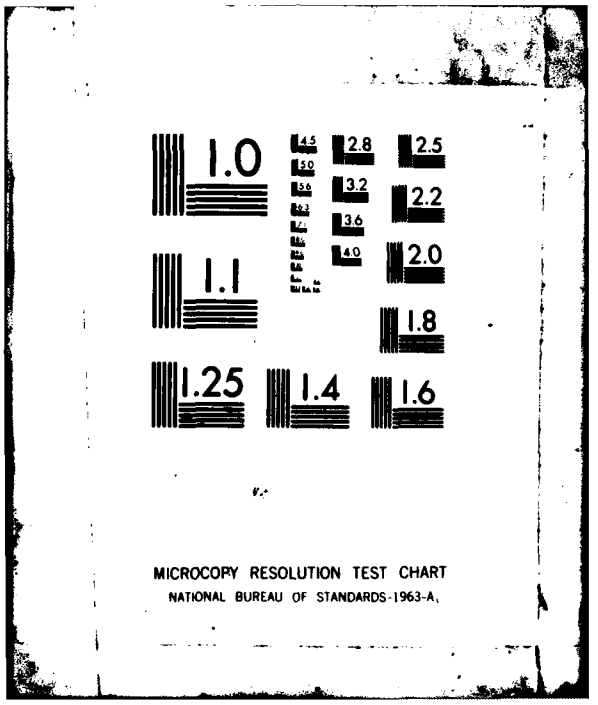
Two different applications of retention t-tests provided the initial supporting evidence for this conclusion. When the entire sample was tested at once, there were no

differences in retention between the two systems. Consequently the perceived effectiveness of both systems was accepted as equal. Then, splitting the sample into two groups--one group characterized by uncertainty about or negative feelings toward a career, and another group planning on an Air Force career--allowed a more meaningful consideration effects of Dual Track on career decisions. The noncareer group professed a much higher career intent when questioned about the Dual Track System. The career group, on the other hand, indicated a lower career intent under Dual Track, but the magnitude of the change was small. A synthesis of these results leads to the following conclusions: for those Air Force pilots already planning on a career, Dual Track induces some career uncertainty but no wholesale retention changes; for those pilots who have not decided on a career, however, Dual Track appears to be a very attractive alternative and produces a large increase in retention.

The analysis of the joint frequency distribution of present career intent and Dual Track career intent quantified these conclusions. For those pilots who were undecided or against a career under the present system, exactly 50 percent switched to career status under Dual Track; but of those who were presently decided on a career, only 2 percent switched to noncareer status under Dual Track, while 31 percent became uncertain. By combining these figures with the alarming loss

AD-A111 371 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL--ETC F/G 5/9
AN EXAMINATION OF DUAL TRACK CAREER MANAGEMENT: CURRENT PILOT A--ETC(U)
SEP 81 G L BENDICK, D J JONES
UNCLASSIFIED AFIT-LSSR-84-81 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

rates for the past several years (see Chapter I), one finds strong support for the assertion of improved retention under Dual Track, for if only half of the pilots lost had been retained, the result would be a big improvement in the retention figures.

Two questions were included in the survey to ascertain the first and second most important reasons for which career pilots had decided to remain in the Air Force. Topping the list of responses to both questions was the same reply: the opportunity to fly. This is a clear indication that a significant percentage of Air Force pilots consider flying itself to be of paramount importance to their career choices, and as a result, argues strongly for a career management system that recognizes this desire.

Two sections of the survey analysis, AID and regression, identified and quantified some issues that affect retention. The most significant predictor of retention was job satisfaction, followed closely by years of military service and attitude toward additional duties. These three factors also generated the AID splits which led to the subgroup with the lowest retention: the pilots in this subgroup expressed low levels of job satisfaction, had less than six years of military service, and did not think that additional duties should be necessary for career progression. This is exactly the pilot group which is most likely to be retained under the Dual Track System. Track II of this

system is designed to accomodate 30 percent of the pilot force in career flying positions, unencumbered by additional duties. The selection of this track occurs near the end of the pilot's initial active duty service commitment, at a time when the career decision weighs most heavily on a pilot. Since the system provides a choice, within limits, between two career management structures, Dual Track would surely result in an increased sense of fair treatment. Improved retention would follow.

Efficiency of the Dual Track System

The results of the efficiency analysis clearly establish the Dual Track System to be a superior system in terms of cost savings. The study revealed that the present concept of training three pilots to fill one pilot position for a 20-year period is a less efficient manner of doing business than the Dual Track System. The cost figures in Chapter V illustrated that pilots in Track II of the Dual Track System saved Air Force dollars in the case of all four aircraft in the analysis and at all levels of Track II utilization, with 30 percent utilization of Track II pilots offering the largest potential for savings. The primary reason for savings in the hundreds of millions of dollars is the huge replacement cost involved in training multiple pilots for one flying position. The Dual Track System relieves some of the training and replacement costs presently

experienced by the Air Force.

Beyond these savings, other, collateral benefits have the potential of saving huge sums of money. With highly experienced pilots in Track II a reduction in both sorties and aircraft accidents could be expected. Lower overhead expenses would result from reduced PCS movement and the smaller unit staffs needed to supervise the Track II pilots. Most of these collateral benefits would be difficult to quantify without expanded Air Force studies, but their potential for cost saving is enormous.

This study has concluded that the Dual Track System is a superior management tool for pilots, both in terms of effectiveness and efficiency. The proposed system, however, is not intended to supplant the present framework of Air Force personnel management, only amend it. There is a specific need for pilots to fill senior leadership positions, and the Dual Track System recognizes that need: at least 70 percent of all Air Force pilots would still train for those positions. But this study suggests that a core of highly experienced career pilots is needed to [illegible]er the declining levels of cockpit experience, and has found this concept acceptable to pilots in the field today. The Dual Track System, which promises to yield multiple benefits, is one solution to a retention problem that is likely to plague Air Force personnel managers until a more tenable approach to pilot career management is undertaken.

Recommendations for Further Study

The following steps are recommended to accomplish a more thorough assessment of the Dual Track System:

1. An Air Force-wide survey of pilots with 4 to 10 years of military service. This would eliminate any possible bias that might have crept into the opinions of pilots attending SOS.

2. A detailed analysis at USAF Headquarters to determine the acceptance of the Dual Track System by senior leadership positions at the Air Staff and major command levels.

3. An expanded economic analysis to include all aircraft in the USAF inventory. This analysis would determine for what aircraft the Dual Track System is feasible and, hence, the total number of pilots involved.

4. Implementation of the Dual Track System on a trial basis. This recommendation is conditional on the first two steps: if a substantial number of pilots and senior leaders accept the system, a trial should be conducted. Such a trial could be organized by wing, numbered Air Force, major command, or aircraft type. However, it is strongly recommended that a sufficiently large group of pilots be used and spread out geographically to avoid any possible stigma or "Hawthorne effect" during the trial itself.

APPENDIX A

DUAL TRACK CAREER MANAGEMENT SURVEY

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433

REPLY TO ATTN OF: LSH (LSSR 84-81)/Capt G. Bendick/Capt D. Jones/Autovon 785-6569

SUBJECT: Dual Track Career Management: Survey of Pilot Attitudes

TO:

1. The attached questionnaire was prepared by a research team at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio. The purpose of the questionnaire is to acquire data concerning pilot attitudes toward retention and the dual track system of career management.

2. You are requested to provide an answer or comment for each question. Air University Survey Control Number 81-8 has been assigned to this questionnaire. Your participation in this research is voluntary.

3. Your responses to the questions will be held confidential. Please remove this cover sheet before returning the completed questionnaire. Your cooperation in providing this data will be appreciated and will be very beneficial in examining the pilot retention problem. Please return the completed questionnaire when you are finished.

Charles R Margenthaler

CHARLES R. MARGENTHALER, Colonel, USAF
Dean
School of Systems and Logistics

1 Atch
Questionnaire

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations, and/or

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

INSTRUCTIONS: Indicate your answers by circling appropriate letters in this question booklet. Select only one response to each question, and erase cleanly any responses you wish to change. If you are currently TDY enroute to a permanent change of station, answer all questions with reference to your last assignment. Please write any comments you have about any subject in this survey on the reverse side of the last page.

1. In which course are you enrolled?

   a. Squadron Officer School
   b. Air Command and Staff College

2. What is your grade?

   a. Second Lieutenant
   b. First Lieutenant
   c. Captain
   d. Major
   e. Lieutenant Colonel

3. To which organization are you assigned?

   a. Alaskan Air Command
   b. US Air Force Academy
   c. Aerospace Defense Command
   d. US Air Forces Europe
   e. Air Force Logistics Command
   f. Air Force Systems Command
   g. Air Training Command
   h. Headquarters USAF
   i. Military Airlift Command
   j. Pacific Air Forces
   k. Strategic Air Command
   l. Tactical Air Command
   m. Other

4. What is your current pilot qualification?

   a. Flight Examiner Aircraft Commander
   b. Instructor Pilot
   c. Aircraft Commander
   d. First Pilot
   e. Copilot

5. How much active military service have you completed?

   a. Less than 4 years.
   b. 4 years but less than 5 years
   c. 5 years but less than 6 years
   d. 6 years but less than 7 years
   e. 7 years but less than 8 years
   f. 8 years but less than 9 years
   g. 9 years but less than 10 years
   h. 10 years but less than 11 years
   i. 11 years but less than 12 years
   j. More than 12 years

6. How many years have you been a rated officer (number of years since UPT)?

a. Less than 4 years
b. 4 years but less than 5 years
c. 5 years but less than 6 years
d. 6 years but less than 7 years
e. 7 years but less than 8 years
f. 8 years but less than 9 years
g. 9 years but less than 10 years
h. 10 years but less than 11 years
i. 11 years but less than 12 years
j. More than 12 years

7. What is the source of your commission?

a. Service Academy
b. OTS (prior service)
c. OTS (non-prior service)
d. ROTC
e. Direct (prior service)
f. Direct (non-prior service)

8. What is your current military status? Select the <u>most</u> appropriate response.

a. Reserve officer on initial active duty term with an established DOS
b. Career reserve officer on initial active duty term
c. Career reserve officer beyond initial active duty term
d. Career reserve officer beyond initial active duty term with an established DOS short of 20 years of service
e. Regular officer
f. Regular officer with an established DOS

9. If you do not now have a Regular Commission, would you accept one if it were offered?

a. Not applicable, I already have a Regular Commission
b. Yes, definitely
c. Yes, probably
d. I'm not sure what I would do
e. No, probably not
f. No, definitely not

10. At this time, what is your attitude toward making the Air Force a career?

a. Definitely intend to make the Air Force a career
b. Probably will make the Air Force a career
c. Leaning toward making the Air Force a career
d. Not sure/undecided
e. Leaning toward not making the Air Force a career
f. Probably will not make the Air Force a career
g. Definitely will not make the Air Force a career

11. How much active duty service commitment do you currently have remaining? (Do not count the commitment you incur as a result of the present course.)

a. None
b. Less than 1 year
c. 1 year but less than 2 years
d. 2 years but less than 3 years
e. More than 3 years

12. What is your marital status?

a. Married
b. Never been married
c. Divorced and not remarried
d. Legally separated
e. Widower/widow

13. How do you think your military pay (including all allowances and other entitlements) compares with pay in civilian employment for similar work?

a. Military pay is far higher than civilian
b. Military pay is somewhat higher than civilian
c. Both about equal
d. Military pay is somewhat less than civilian
e. Military pay is far less than civilian

14. During an average month, how many days do you spend performing additional duties?

a. 0-3
b. 4-6
c. 7-9
d. 10-12
e. 13-15
f. More than 15
g. I do not perform additional duties

15. Which one of the following shows <u>how much of the time</u> you feel satisfied with your job?

a. All of the time
b. Most of the time
c. A good deal of the time
d. About half of the time
e. Occasionally
f. Seldom
g. Never

16. Choose <u>one</u> of the following statements which best tells how well you like your job.

a. I hate it
b. I dislike it
c. I don't like it
d. I am indifferent to it
e. I like it
f. I am enthusiastic about it
g. I love it

17. Which one of the following best tells how you feel about changing your job?

a. I would quit this job at once if I could
b. I would take almost any other job in which I could earn as much as I am now earning
c. I would like to change both my job and my occupation
d. I would like to exchange my present job for another one
e. I am not eager to change my job, but I would do so if I could get a better job
f. I cannot think of any job for which I would exchange my present job
g. I would not exchange my job for any other

18. Which one of the following shows how you think you compare with other people?

a. No one likes his/her job better than I like mine
b. I like my job much better than most people like theirs
c. I like my job better than most people like theirs
d. I like my job about as well as most people like theirs
e. I dislike my job more than most people dislike theirs
f. I dislike my job much more than most people dislike theirs
g. No one dislikes his/her job more than I dislike mine

19. If you plan to separate from the Air Force prior to retirement, which of the reasons listed below do you consider <u>most important</u> in your decision to separate? (Select only one)

a. Not applicable; I intend to remain in the Air Force
b. Work schedule instability
c. Performance evaluation system
d. TDY expenses
e. Security of future uncertain
f. Inadequate military pay and allowances (including incentive pay)
g. Lack of career progression/development
h. Lack of opportunity to exercise independent judgment
i. Uncertain future of retirement system
j. Threat to or apparent loss of entitlements (except retirement system)
k. Family life disruptions caused by job
l. Excessive non-flying work requirements
m. Limited promotion opportunities
n. General dislike of the Air Force way of life
o. Assignment instability
p. Air Force management and policies
q. Received an undesirable assignment
r. I entered the Air Force for training and never really considered making it a career
s. I received a civilian job offer
t. Did not get selected for Regular Commission
u. Other (please specify in comments)

20. Using the same list of reasons from question 19, what is the <u>second most important</u> reason in your decision to separate? (If there is no second reason, select response "u")

a b c d e f g h i j k l m n o p q r s t u

21. How would you rate the importance of Professional Military Education in your career development plans?

a. Very important
b. Somewhat important
c. Only important as square filler
d. Not important
e. No opinion

Below are items that relate to your job. Read each statement carefully and then decide to what extent the statement is true of your job. Indicate the extent to which the statement is true for your job by choosing the response which best represents your assessment.

a. Very little
b. A small amount
c. A moderate amount
d. A large amount
e. Very much

22. How much are you left on your own to do your own work?

a b c d e

23. How often do you see projects or jobs through to completion?

a b c d e

24. To what extent do you find out how well you are doing on the job as you are working?

a b c d e

25. To what extent are you able to act independently of your supervisor in performing your job function?

a b c d e

26. To what extent do you receive information from your superior on your job performance?

a b c d e

27. To what extent are you able to do your job independently of others?

a b c d e

Below are further items that relate to your job. Read each carefully and indicate what amount of each characteristic your job contains.

a. A minimum amount
b. A small amount
c. A moderate amount
d. A large amount
e. A maximum amount

28. The feedback from my supervisor on how well I'm doing

a b c d e

29. The freedom to do pretty much what I want on my job

a b c d e

30. The degree to which the work I'm involved with is handled from beginning to end by myself

a b c d e

31. The opportunity to find out how well I am doing on the job

a b c d e

32. The opportunity for independent thought and action

a b c d e

33. The opportunity to complete work I start

a b c d e

34. The feeling that I know whether I am performing my job well or poorly

a b c d e

35. The control I have over the pace of my work

a b c d e

36. The opportunity to do a job from the beginning to end (i.e., the chance to do a whole job)

a b c d e

37. If you intend to make the Air Force a career, which of the reasons listed below do you consider <u>most important</u> in your decision? (Select only one)

a. Not applicable; I intend to separate prior to retirement or am undecided
b. GI Bill benefits
c. Opportunity for career progression as a pilot
d. Prestige of Air Force career
e. Retirement benefits
f. General liking for Air Force way of life
g. Uncertainty of civilian employment
h. Medical benefits provided
i. Job security
j. Opportunity for variety of different jobs during career
k. Recently tendered Regular Commission
l. Opportunity to fly
m. Desire to serve country
n. Sense of involvement in international affairs
o. Current trend toward improved conditions in the military
p. Opportunity for overseas travel
q. Opportunity for career progression as an Air Force manager/leader
r. Recent promotion in rank or duty position
s. Pay and benefits (including incentive pay)
t. Promotion system not based on seniority
u. Other (please specify in comments)

38. Using the same list of reasons from question 37, what is the <u>second most important</u> reason in your decision to make the Air Force a career? (If there is no second reason, select response "u")

a b c d e f g h i j k l m n o p q r s t u

Please read each of the statements below carefully. Using the following scale, indicate how much you agree or disagree with each statement.

STRONGLY DISAGREE	DIS-AGREE	SLIGHTLY DISAGREE	NEITHER AGREE NOR DISAGREE	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
A	B	C	D	E	F	G

Circle A if you STRONGLY DISAGREE
Circle B if you DISAGREE
Circle C if you SLIGHTLY DISAGREE
Circle D if you NEITHER AGREE NOR DISAGREE
Circle E if you SLIGHTLY AGREE
Circle F if you AGREE
Circle G if you STRONGLY AGREE

Please respond to every statement. While some of the statements may appear similar to each other, no two statements are identical. Please do not go back to previous statements. Try to give a true picture of your feelings and opinions.

39. Most additional duties are usually necessary.

A B C D E F G

40. The current promotion system is an effective means of maintaining a quality officer force.

A B C D E F G

41. After I leave the Air Force, I plan to fly for the airlines.

A B C D E F G

42. As long as the mission is successfully accomplished, Aircraft Commanders are given considerable leeway in how to do it.

A B C D E F G

43. In general, the present promotion system is fair.

A B C D E F G

STRONGLY DISAGREE	DIS-AGREE	SLIGHTLY DISAGREE	NEITHER AGREE NOR DISAGREE	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
A	B	C	D	E	F	G

44. I feel I am doing something important by serving as a member of the Air Force team.

A B C D E F G

45. I am proud to serve the Air Force in a flying capacity.

A B C D E F G

46. The Air Force OER system is generally being administered fairly and equitably in my organization.

A B C D E F G

47. I see the Air Force as a way of life and not simply a place to work.

A B C D E F G

48. The concern over loss of Air Force benefits is not justified.

A B C D E F G

49. To get the performance ratings needed for promotion, pilots must pull additional duties within the squadron.

A B C D E F G

50. The benefits offered by the Air Force are just as attractive as they used to be.

A B C D E F G

51. Promotions are usually based on performance and ability.

A B C D E F G

52. Due to operational necessity, pilots must pull additional duties within the squadron.

A B C D E F G

STRONGLY DISAGREE	DIS-AGREE	SLIGHTLY DISAGREE	NEITHER AGREE NOR DISAGREE	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
A	B	C	D	E	F	G

53. Flying places me in an elite profession.

A B C D E F G

54. The Air Force usually tries to take care of its own.

A B C D E F G

55. My flying pay is a strong incentive to keep flying.

A B C D E F G

56. Job security is an attractive feature of an Air Force career.

A B C D E F G

57. The prestige of flying is a major reason for my having a flying position.

A B C D E F G

58. Flying pay is one of the most important incentives for flying.

A B C D E F G

59. My rating official (the person who writes my OER) is very familiar with my work.

A B C D E F G

60. Additional duties have a stronger influence on my OER than do flight related duties.

A B C D E F G

61. Aircraft Commanders have too much responsibility and not enough authority.

A B C D E F G

STRONGLY DISAGREE	DIS-AGREE	SLIGHTLY DISAGREE	NEITHER AGREE NOR DISAGREE	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
A	B	C	D	E	F	G

62. Flying is more important to me than getting promoted.

A B C D E F G

63. Aircraft Commanders have enough authority to get the job done.

A B C D E F G

64. In general, an Air Force career provides more job security than a civilian career.

A B C D E F G

65. If I could get a definite job offer from a commercial airline, I would separate from the Air Force as quickly as possible.

A B C D E F G

66. I have a good chance for promotion.

A B C D E F G

67. I feel secure about my future in the Air Force.

A B C D E F G

68. When I entered the Air Force, I intended to receive flight training and separate at the earliest possible date.

A B C D E F G

69. Additional duties provide an excellent opportunity for career broadening while continuing to perform line flying duties.

A B C D E F G

70. I would sign a contract with an upper limit on my promotion opportunities for a guaranteed flying job in the Air Force.

A B C D E F G

Please read the following paragraphs carefully:

Suppose that the Air Force was planning to adopt a dual track policy for managing pilot careers. Pilots would be given the option, at the end of their initial active duty service commitment, of which career management track they preferred.

Track 1 would be similar to the present "whole man" concept, with emphasis on support as well as rated duties.

Track 2 would encompass only pilot duties and would be subject to these provisions:

1. Option available to approximately thirty percent of force.

2. No PME or advanced degree required.

3. Limited flow between weapons systems/limited PCS moves.

4. OER/promotions based only on rated performance. Tracks considered separately for promotions.

5. Pay keeps pace with Track 1 (commensurate with promotions).

6. Tenure guaranteed to twenty years if performance satisfactory. Maximum tenure to age fifty-five.

7. Supervisory responsibilities limited to those associated with flying.

Selection of Track 1 or Track 2 would be made by each pilot near the end of the initial active duty commitment, with a board controlling the percentage of Track 2 selectees. At the twelfth year of service, crossflow from either track to the other would be possible; and at the seventeenth year, ten percent of the Track 2 pilots could reselect Track 1. Both of these options would also be subject to board approval.

Evaluate your reactions to this policy and answer the following questions concerning dual track management as realistically as possible.

71. Even if the Air Force adopted a dual track management policy for pilots, my career intentions would not change.

a. Strongly agree
b. Agree
c. Neither agree nor disagree
d. Disagree
e. Strongly disagree

72. A dual track system of management would not solve the fundamental problems that cause pilots to leave the service.

a. Strongly agree
b. Agree
c. Neither agree nor disagree
d. Disagree
e. Strongly disagree

73. A dual track system would be an effective way of dealing with the inadequacies of the present system.

a. Strongly agree
b. Agree
c. Neither agree nor disagree
d. Disagree
e. Strongly disagree

74. If the Air Force managed pilots under this dual track system, what would be your attitude toward making the Air Force a career?

a. Would definitely make the Air Force a career
b. Would probably make the Air Force a career
c. Would lean toward making the Air Force a career
d. Not sure/undecided
e. Would lean toward <u>not</u> making the Air Force a career
f. Would probably <u>not</u> make the Air Force a career
g. Would definitely <u>not</u> make the Air Force a career

75. A dual track system would lead to cockpit stagnation, as career pilots began to dominate FE and IP crew positions.

a. Strongly agree
b. Agree
c. Neither agree nor disagree
d. Disagree
e. Strongly disagree

76. Any form of dual track career management would be better than the present system of career management.

a. Strongly agree
b. Agree
c. Neither agree nor disagree
d. Disagree
e. Strongly disagree

77. Please list any comments you have concerning the dual track system on the back of this page.

THANK YOU VERY MUCH

APPENDIX B

COMPARISON T-TESTS

TABLE B-1

JOB SATISFACTION T-TESTS
[Response range: 4-28]

	Number of Cases	Mean	S.D.	T Value	Prob.
SAC	54	18.72	3.32	-4.35	.000
MAC	57	21.25	2.78		
SAC	54	18.72	3.32	-3.30	.001
TAC	42	21.00	3.41		
SAC	54	18.72	3.32	-3.63	.000
ATC	57	20.88	2.93		

TABLE B-2

JOB CHARACTERISTIC INVENTORY T-TESTS
[Response scale: 1-5]

	Factor	Number of Cases	Mean	S.D.	Difference Mean	S.D.	T Value	Prob.
MAC	FDBK	57	2.91	.91	-.34	.94	-2.69	.009
	AUT		3.25	.78				
MAC	FDBK	57	2.91	.91	-.50	.99	-3.83	.000
	TID		3.41	1.01				
SAC	FDBK	54	2.89	.82	-.59	.91	-4.76	.000
	TID		3.48	.66				
SAC	AUT	54	2.85	.68	-.63	.73	-6.34	.000
	TID		3.48	.66				
TAC	FDBK	42	3.08	.78	-.35	.87	-2.58	.014
	AUT		3.43	.80				
TAC	FDBK	42	3.08	.78	-.60	.92	-4.25	.000
	TID		3.68	.92				
ATC	FDBK	57	3.19	.81	-.33	.87	-2.85	.006
	AUT		3.52	.79				
ATC	FDBK	57	3.19	.81	-.65	.85	-5.75	.000
	TID		3.84	.75				

APPENDIX C

FACTOR MATRICES

TABLE C-1

HOPPOCK FACTOR SCORE COEFFICIENTS

	FACTOR 1
Q15	.30245
Q16	.32830
Q17	.26584
Q18	.32348

TABLE C-2

JCI ROTATED FACTOR MATRIX

	FACTOR 1	FACTOR 2	FACTOR 3
Q22	.68422	.79422	.15133
Q23	.23718	.13906	.80398
Q24	.82135	.16614	.20442
Q25	.27311	.69618	.16415
Q26	.86736	.15692	.15578
Q27	.16711	.58786	.36614
Q28	.87617	.09328	.13461
Q29	.07773	.85616	.11843
Q30	.16464	.43911	.76154
Q31	.82743	.19841	.17674
Q32	.14018	.75848	.27786
Q33	.19027	.15603	.88956
Q34	.71739	.19651	.18279
Q35	.17094	.56772	.10417
Q36	.24144	.23520	.84915

TABLE C-3

JCI FACTOR SCORE COEFFICIENTS

	FACTOR 1	FACTOR 2	FACTOR 3
Q22	-.05707	.29302	-.08979
Q23	-.04605	-.09556	.33808
Q24	.25179	-.04065	-.03615
Q25	.01679	.23379	-.08866
Q26	.27515	-.13810	-.06498
Q27	-.03774	.15854	.04697
Q28	.28646	-.05196	-.06390
Q29	-.06043	.32568	-.11744
Q30	-.06923	.03176	.24375
Q31	.25478	-.02239	-.05704
Q32	-.05044	.24881	-.02685
Q33	-.06729	-.12448	.38944
Q34	.21500	-.01500	-.03945
Q35	-.00681	.21082	-.08047
Q36	-.04360	-.08812	.34725

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FILE NONAME (CREATION DATE = 19/ 1/01)

VARIMAX ROTATED FACTOR MATRIX
AFTER ROTATION WITH KAISER NORMALIZATION

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
Q39	.22117	.16149	.17280	-.01119	.77714	.10223	-.65675	-.12498	-.03437	-.02162
Q40	.79031	.01898	.19661	.04741	.11914	.07349	-.03347	.06752	-.01810	.12415
Q41	.66173	.07639	.10936	.06868	.63435	-.09255	.14238	.01467	-.00131	.04115
Q42	.13965	.18628	.05377	-.02915	-.01830	.52329	.29374	-.09470	.12516	.06736
Q43	.78854	.11811	.17334	-.01767	.15877	.11491	.08667	.04703	.05532	.04685
Q44	.12297	.79912	-.05894	-.03351	.07695	.09335	.01335	-.03848	.01369	-.06116
Q45	.70944	.05631	-.04323	.10523	.05623	.09221	.01812	-.00862	.01745	-.03322
Q46	.74901	.17473	.08848	-.00238	-.00384	.00662	-.08816	-.15598	.09201	.07921
Q47	.15138	.69663	.06693	-.04514	.17581	-.04338	.02156	-.31328	-.01517	-.09028
Q48	.01311	.05529	.02925	-.02117	.11487	-.01212	-.07988	.02484	.04235	.69447
Q49	.04913	-.11253	.01622	.04682	-.06381	.13332	.02661	-.01639	.08171	.79271
Q50	.19981	-.07857	.07641	.11698	-.01815	.04797	.09035	-.04032	.01235	.04981
Q51	.71655	.08858	.15163	.02215	.17938	-.03567	-.15458	-.08967	.09514	.09624
Q52	.19714	.09159	.06753	-.03316	.76699	.09497	-.08936	.01499	.14561	.13614
Q53	.15769	.58639	.15155	.27733	-.06644	.20552	.04117	.23198	-.04257	-.06161
Q54	.54177	.14724	.24937	.25038	.21884	.15769	.00388	-.12231	.09424	-.13315
Q55	.17401	.08768	.06441	.01154	-.07152	-.00121	-.16596	.00603	-.01818	-.03916
Q56	.17612	-.13576	.72647	.26273	.63856	.00921	-.01982	-.14245	.00747	-.00796
Q57	-.04275	.14417	.22524	.60248	.07186	-.02512	.31337	.10912	.13573	.15187
Q58	-.02313	-.01835	.13619	.85863	.01312	-.04646	-.12268	-.01161	.01551	.02424
Q59	.24726	.13293	-.01974	-.01356	-.20288	.12322	-.25757	-.16044	.12492	.20393
Q60	.22969	-.06312	-.12288	.05797	.05181	-.06221	-.66859	-.00046	.01175	.77585
Q61	.30843	-.02226	.14648	-.04285	.17813	.62676	-.04196	-.08123	-.13323	.05355
Q62	-.04252	.19665	-.05193	-.11603	-.12261	.01239	.85672	.11116	-.00469	.01853
Q63	.15358	.17613	.87736	.00667	.07452	.00966	-.08522	.00746	.09219	-.01014
Q64	.19913	-.13857	.74325	.13641	.02854	.04823	-.01108	-.03195	.04473	-.10866
Q65	-.28428	-.09114	-.07298	.00369	-.25132	-.13759	.04682	.69628	-.05795	-.00896
Q66	.12977	.42385	.54537	-.17764	.12289	.08116	-.12113	.07418	-.12132	.11184
Q67	.21521	.35382	.72946	-.11213	.08883	.05713	-.28314	.00166	.06663	.69211
Q68	.17114	-.23135	-.14867	-.03723	-.12335	.09133	.14897	.51964	.20618	-.03866
Q69	.33115	.02766	.16196	.03288	.09870	.09942	-.13867	-.25756	-.00258	-.17933
Q70	-.18615	-.00774	-.17581	-.03255	-.12247	.62776	.77155	.15150	.01742	-.04921

TABLE C-4

ATTITUDINAL ROTATED FACTOR MATRIX

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FILE NONAME (CREATION DATE = 89/01/01)

FACTOR SCORE COEFFICIENTS

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
Q39	-.02856	-.01384	-.03785	.01151	.44786	-.02479	.65017	.03662	-.05618	-.00247
Q40	.31697	-.04375	-.07511	-.00177	-.03663	-.00757	.03416	.07439	-.11282	.01528
Q41	.02187	.74710	.01279	.01821	.13919	-.03695	-.02037	.56179	-.06275	.02373
Q42	.01776	.02335	.30654	-.00996	-.07359	.27497	.17015	-.08839	.04539	.02627
Q43	.28983	-.14954	-.12944	-.04152	-.01459	.00441	.05849	.06851	-.04912	-.04176
Q44	.01853	.31514	-.09269	-.03483	-.02703	-.02331	-.10869	.31857	.03154	-.01769
Q45	-.01159	.31899	-.08455	.03327	-.02520	-.01682	-.00998	.01819	.03034	.00770
Q46	.33191	.04165	-.08117	-.03612	-.14962	-.06347	.11544	-.37527	-.04598	-.05045
Q47	-.13617	.26635	-.31698	-.01721	.13226	-.11853	.06478	-.16803	.01252	-.01272
Q48	-.11174	.06034	-.08898	-.05851	.05022	-.03795	-.09583	.04514	.56717	.01888
Q49	-.07439	-.01238	.03238	.00837	-.02258	.05516	.03241	-.03746	-.01130	.55535
Q50	.04487	-.02765	-.08212	.01336	-.04463	.06483	.03228	-.03752	.51094	-.07166
Q51	.25667	.00193	-.04425	-.02741	.04691	-.08506	-.03928	.05142	-.01479	.04462
Q52	-.10671	-.00718	-.35439	-.00296	.54163	-.01394	-.08786	.12082	.07541	.09731
Q53	-.01411	.21392	.03201	.10677	-.09608	.09606	-.02598	.14908	-.02811	-.02875
Q54	.16075	-.03239	.01682	.10828	.03237	.03813	.07062	-.03747	-.00827	-.13732
Q55	.05761	.00890	-.10204	.40192	-.06497	.02361	-.08459	-.00670	-.04834	-.04323
Q56	-.04912	-.10748	.37478	.07716	-.03427	-.01739	.07495	-.08917	.04956	-.01032
Q57	-.09373	.03656	.10256	.29803	.11879	-.04649	.21316	.30642	.03451	.13287
Q58	-.04973	-.02316	-.05028	.43855	.02816	.00195	-.05061	-.02189	-.02613	.02316
Q59	.08294	.06737	-.06297	-.02753	-.22925	.06573	-.15639	-.07984	.06867	.10487
Q60	.02115	.01395	-.03629	.03163	.06478	-.08335	.01477	-.07212	-.07233	.53976
Q61	-.06382	-.09438	-.02599	.01721	.04656	.49984	-.04430	.01361	-.11923	.01567
Q62	.06175	.71361	.04567	-.04852	-.01357	-.03854	.02223	-.07459	-.04339	.03476
Q63	-.04194	-.00624	-.31460	.00662	-.05056	.48861	-.18362	.07159	.04731	-.05100
Q64	-.02151	-.11389	.38981	.00915	-.04151	.01271	.05845	-.01054	-.01094	-.08804
Q65	-.04313	.01321	.02518	-.01467	-.02918	-.06454	-.13845	.40124	-.03849	-.05664
Q66	-.06538	.14484	.28326	-.14515	.07745	-.01674	-.04765	.10104	-.04234	.16623
Q67	-.04895	.11310	.36759	-.13906	-.04848	-.03191	-.09218	.06171	.03368	.07117
Q68	.11185	-.08222	-.06241	-.03848	-.03194	.08932	-.04866	.35286	.15189	-.04754
Q69	.03681	-.06925	-.00523	.02151	.34575	-.00669	.01597	-.05688	-.04941	-.13614
Q70	.01419	-.00189	-.01863	.01316	.02222	.00361	.43733	-.03795	-.00919	-.04799

TABLE C-5

ATTITUDINAL FACTOR SCORE COEFFICIENTS

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